

tiny forms were no longer visible. I know no greater enjoyment than lying securely in the netting under the jib of a nice vessel and scanning the birds as they pass—the Flying-fish darting up from before the rushing prow, and the *Medusæ*, *Velellæ*, *Physaliæ*, and other “monsters of the deep” gliding silently along. The naturalist may indeed exclaim with the Psalmist, “O God, how wonderful are thy works! in wisdom hast thou made them all.”

2nd.—Off Cape St. Francis, but out of sight of land. Four Turnstones (*Strepsilas interpres*) came off to us, and our first and, as it proved, *only* Cape Pigeon (*Daption capensis*); Cape Hens abundant. From this time all our old Cape friends appeared, the first Gannet turning up off Cape St. Sebastian, in company with a Gull in his first year’s plumage. The little Petrels waited on us till we rounded “Green Point,” which we did on the morning of the 9th; and as if to welcome me back to my old place, a shoal of Dolphins came tumbling and gamboling round the ship. While we rowed ashore in the port boat, which my old friend Wilson, the Port Captain, brought out ever so far to pick up “the Curator,” a flock of Penguins (*Spheniscus demersus*) came up, grunted a “How do,” and, turning “tail on end,” went on with their fishing below. A few moments after, the hearty welcome of crowds of friends and the sight of old familiar faces made me forget I had been away from the Cape for nearly sixteen months.

XXV.—*The Ornithology of Formosa, or Taiwan.*

By ROBERT SWINHOE, Esq., F.Z.S.

(Plate VI.)

[Continued from p. 219.]

13. CAPRIMULGUS STICTOMUS, Swinhoe: *Caprimulgus*, sp.?, Swinhoe, *Ibis*, 1860, p. 47, et 1861, p. 30.

This species has the naked tarse of *C. monticola*, Franklin (*gymnopus*, Hodgs.), and has like it also in the male the exterior lateral tail-feather white. I first made its acquaintance in a copse on the Changchow River, near Amoy, where I have found it several consecutive years at the end of September and beginning of October. It is at that season always moulting, and its



prescribed time of stay is as nearly a month as possible. The small party that annually visit this wood appear to come from the interior to recruit their strength and recover their feathers, and then to pass southwards. In Hongkong and Macao I found the same species as a summer resident only. In Formosa it occurred as an abundant summer resident on the plains about Taiwanfoo; but both specimens I procured were females. Unfortunately, the only male I procured at Amoy was so shattered that I threw it away, and I have reserved no note of it; but I have adult females and immature birds from that locality, which in most respects agree with those procured in Formosa. The Formosan bird is, however, smaller, much paler, and less distinctly spotted, and may perhaps be ranked as a variety.

♀, procured at Apes' Hill, in November. Length $9\frac{1}{3}$ in.; wing $7\frac{8}{10}$; tail $4\frac{6}{10}$. Throat with two large white spots. A large spot of reddish white on each of the first three quills, occupying both webs in all except the first quill. Head spotted with black. A rufous collar extends from shoulder to shoulder. Wing-coverts and breast marked with large spots of clear rufous buff. Middle tail-feathers with nine bands of black. Tarse almost entirely naked, except at the tibial joint. Trachea $\frac{2}{10}$ in. broad, composed, near the lower larynx, of very thin close rings angulated downwards; the lower larynx not covered with muscle. The sterno-tracheal muscles, on giving off, become large and fleshy, and increase in bulk towards the coracoids. Heart $\frac{8}{10}$ in. long by $\frac{5\frac{1}{2}}{10}$. Liver, right lobe 1 in., left $\frac{9}{10}$. A mass of yellow fat covered the belly. Œsophagus hard, $\frac{2}{10}$ in. broad; proventriculus granulated, $\frac{6}{10}$ long, ovate, $\frac{4}{10}$ at greatest diameter. Stomach $1\frac{2}{10}$ in. long, 1 broad, $\frac{6}{10}$ deep, ovate, and compressed; its tendons large and its sides hard and muscular; epithelium thick and ochreous brown, broadly and deeply furrowed with longitudinal rugæ, well distended with remains of Coleoptera (chiefly *Cetoniæ*) and of nocturnal Lepidoptera. Ovary with numerous small eggs. Oviduct thin and black, $\frac{2}{10}$ in. wide and $1\frac{1}{2}$ long, leading into the cloaca, proving that the bird was a mature female. Cæca $1\frac{2}{10}$ in. from anus; right one $1\frac{1}{2}$ long, left one $1\frac{7}{10}$, both terminating in large black sacs, $\frac{3}{10}$ at widest part, their stems being $\frac{6}{10}$ long by $\frac{1}{2}$ thick. Intestine $9\frac{1}{2}$ in. long, varying in thickness from $\frac{1}{10}$ to $\frac{3}{10}$.

In the spring, at Tamsuy, N.W. Formosa, I witnessed the arrival of large numbers of *Caprimulgidæ*, which I took for this species. Like most of the Goatsucker group, they skulked about the roots of the bushes on the hill-sides during the day, and then required almost to be trodden upon before they would spring. When they rose, they dashed away with uncertain flight for a short distance and then fell, sometimes among bushes, but often on the bare ground, flapping and running awkwardly under the nearest cover of a stone or tuft of grass. On their first arrival, while the weather was still fresh, they frequented the banks of a hot sulphur-spring, where the steaming exhalations heightened the temperature and imparted to the atmosphere a disagreeable sulphurous odour. The birds, though in good condition, seemed to shrink from the cold, and sought the friendly warmth of the ravine, regardless of the deleterious smell, thus proving that they had sought these latitudes from a warmer climate.

I subjoin the description of another female, shot 10th October, 1861, at Taiwanfoo, which differed somewhat from the last in being paler and less distinctly spotted.

Length $9\frac{7}{10}$ in.; wing $7\frac{4}{10}$; tail $4\frac{3}{10}$, of ten feathers. Bill brownish flesh-coloured, largely tipped with blackish brown. Inside of mouth flesh-colour. Rim round the eye broad and smooth, clear ochre. Ear-conch large and triangular, with the vertex uppermost, the aperture exposed through a broad perpendicular slit. Tarsi naked; legs dark madder-brown, with whitish edges to scutes and whitish soles to feet; claws blackened, pecten whitish. Scapulars broadly edged with creamy burnt sienna. Wings closing to within $\frac{3}{10}$ in. of end of tail.

Heart $\frac{7}{10}$ by $\frac{5}{10}$ in. Yellow fat covering the belly. Liver very small, right lobe $\frac{8}{10}$, left $\frac{1}{2}$. Oesophagus thick and fleshy, $\frac{2}{10}$ in. wide; proventriculus $\frac{6}{10}$ by $\frac{4}{10}$. Stomach 1 in. by $\frac{7}{10}$, $\frac{6}{10}$ deep, of an irregular oval, with tendons little muscular; epithelium thick and leathery, ochreous, furrowed deeply in different directions, and containing remains of Coleoptera (chiefly *Cetoniæ*). Cæca $\frac{1}{2}$ in. from anus, right $1\frac{2}{10}$, left $\frac{9}{10}$, both bulging into black sacs, $\frac{2}{12}$ at broadest, and tapering at the ends. Intestine $7\frac{3}{10}$ in. long, varying from $\frac{1}{10}$ to $\frac{3}{10}$. Ovary with numerous small eggs.

The common summer species of China and Japan, *C. jotaka*, Schleg., allied to *C. europæus*, did not occur in Formosa.

14. *CYPSELUS VITTATUS*, Jard. & Selb. Ill. Orn. n. s. t. 39.

This species, which I have noted all along the coast of China, from Amoy to Talien Bay, was also seen in S.W. Formosa in summer, where, I suspect, a few nidificate, as is the case on many islands off the Chinese coast. It is everywhere in China only a summer visitant, arriving in early spring. Possessed of very long wings, and consequently of extensive powers of flight, it may be seen at all hours of the day soaring at a great height, apparently never resting till the shades of evening compel it to take refuge from the darkness. In damp foggy weather, however, it descends to nearer the earth, darting, with quick flight and screams, round hills and other prominences. Like all the species of Swifts I have observed, it copulates in the air, the female arresting herself and hovering while the male performs his offices. It builds in the holes of houses, often under eaves, and in many places in the crevices of rocks. The *Cypselus australis*, Gould (*Hirundo pacifica*, Lath.), is a closely related species from Australia; but I cannot think it the same, as ours migrates in summer in a south-westerly direction, and probably finds winter quarters, as is the case with many other species of birds, in the plains of Hindostan. It is true that Australia does render us one species of Swift, the *Chaetura caudacuta* (Lath.) (*Hirundo ciris*, Pallas, Z. R. A. vol. i. p. 541), differing chiefly from its Himalayan ally, *C. nudipes*, Hodgs., in its white forehead; but its movements are by no means regular. The *Chaetura* I never saw but once at Amoy, and that was after heavy, stormy weather, when a pair were seen, one afternoon, in company with numbers of the present species, and one of them was procured. The *C. caudacuta*, in its wanderings, seems sometimes to range into Amoorland, as noted by Von Schrenck, and thence even to England; but these instances must, I think, at present, until more facts are ascertained, be looked upon as certain vagaries that long-winged birds are guilty of, which "no fellow can understand," rather than as regular migrations ordained to occur year after year.

15. *CYPSELUS SUBFURCATUS*, Blyth. *C. affinis*, mihi, 'Ibis,' 1860, p. 48, et 1861, p. 30.

This Swift is larger, much blacker, and with less furcate tail than its near ally, *C. affinis*, J. E. Gray, from continental India. Mr. Blyth has identified it as his Malayan species. It is locally distributed about South China, being generally resident in places where it occurs. It builds a nest under the eaves and rafters of houses much in the form of the House Martin (*Chelidon urbica*), but the exterior coating of it differs in being composed of thin layers of wool, hair, and dried grass, glued one above the other with the saliva of the bird, and lined internally with feathers. These nests serve the owners for a house all the winter through. In them they rear their young (only one brood in the year), in them they roost every night, and to them they frequently return during the day for rest after their long-sustained flights. The pairs keep together all the year, mingling however, in small parties, with others of the species from the same neighbourhood. These parties never seem to wander far, but seek their *Dipterous* food close to their homes, regulating the altitude of their flights according to the state of the atmosphere; and when a pair are anxious for rest, they leave the flock and fly down to their nests for repose, in which they remain twittering for half an hour at a time, and then dart out, pursuing and screaming after one another. In the spring they patch up the same nest, and use it as before till the close of the year. They seem to be very gentle birds, and greatly attached to one another. A pair built a nest under the beam of a verandah in my house at Amoy, and occupied the same for three years. I had thus ample opportunities of watching their habits. At Apes' Hill, Formosa, I met with this species again. Here it was nesting, not however under the roofs of houses, but in its primitive state under the ledges of rocks, building the same Martin-like nest. It was only in S.W. Formosa that I observed this bird; and I may here remark that I have never been able to trace it further north on the Chinese coast than Amoy, which is a trifle higher latitude than its position in Formosa.

✓ 16. *HIRUNDO GUTTURALIS*, Scop.*

I use this name for our smaller Eastern form of *H. rustica*, because I believe it to be the oldest applicable: the true *H. javanica*, Sparrm., seu *panayana*, Gmel., from Java, is, as Prof. Schlegel has shown me, quite a distinct bird. Our species, ranging in summer from Canton to Peking, Mr. Blyth assures me is identical with specimens procured in winter in Calcutta; hence I infer that the birds that visit China in spring, and uniformly leave again in autumn, return to hibernate in the warm plains of India. The summer migrations of this species extend into Siberia and Amoorland on the one hand, as we learn from V. Schrenck, and to Japan, as far north as Hakodadi, as we learn from Capt. Blakiston's collection. In summer it also visits Formosa, but is chiefly confined in its distribution to the S.W. It is by no means so common there as the following species, with which it never seems to keep company during the period of nidification. In its habits, in nest, and colour of eggs, &c., this bird entirely agrees with the European *H. rustica*; yet in size it is always smaller, and in minor personal features different. I think it therefore necessary, for the sake of geographical distribution and the laws of migration, not to confound them with each other.

♂. Length 8 in.; wing $4\frac{7}{10}$; tail $4\frac{1}{2}$, lateral feathers exceeding the rest by 2 inches. Bill brownish black; inside of mouth dark ochre-yellow. Legs and claws deep purplish brown.

♀. Length $6\frac{9}{10}$ in.; wing $4\frac{5}{10}$; tail $3\frac{3}{10}$, lateral feathers $\frac{9}{10}$ longer. Claws and legs much lighter than in male. The pectoral band is browner, and the under parts brownish rufescent, instead of white as in the male. The axillaries are, however, darker.

✓ 17. *HIRUNDO DAÜRICA*, L.

H. alpestris, Pall.

Pallas, with his usual minuteness, has well described this bird and its nesting peculiarities. It is found in the extreme north of China as a summer resident only; but in the south, where the winter climate is more genial, it stays all the year, roaming about

* I fully agree with most modern naturalists in considering the Swallows as an extreme modification of the *Muscicapidæ*. It is now too late, however, in this paper, to place them in their proper position.—R. S.

in small parties during the cool weather, and merely shifting its haunts from exposed to sheltered localities according to the severity of the season. In Southern China it is by no means so common as the Chimney-Swallow, and far more locally distributed; but in Formosa, both north and south, it abounds in almost every homestead. Being a resident bird, and not subject to distant migrations, we should naturally expect, according to recent theories, to find it subject to some variation through its insular position; and this we do observe in the larger form, longer wing, and almost entire absence of the red nuchal collar in our bird. The same facts are observed and indirectly admitted in the variety prevalent at Japan by a thorough anti-Darwinian—Professor Schlegel, who is so struck with the differences offered by the Japanese bird as to make of it a subspecies under the term *H. alpestris japonica*. The variations in the Formosan bird are, however, too trifling to found on them a new species; and were not the triple nomenclature held in such objection by the majority of modern naturalists, we could not do better than employ it in this instance. On taking possession of our native house at Tamsuy, I observed a nest of this Swallow under the rafters in the central hall. It was exteriorly built of specks of mud, like the nests of the Martin, but had a neck-like entrance, giving the whole the form of a French flask, flattened against the roof; the inside was lined amply with feathers. Pallas's figure gives a very good idea of its structure. The mouth, however, does not always point upwards, but is adapted in form and direction to the shape of the spot against which it is placed. At the close of March the pair to which the nest belonged returned, and in April began to repair the old nest. Towards the close of this month the female was sitting on three white, unspotted eggs. The male and female share the duties of incubation, the female usually taking the longest spell. For the sake of science, we let the birds have their own way, though they made a great mess about our small house, and nearly drove us wild with their loud, discordant twittering.

In a ramble one spring morning, at dawn, I saw large numbers of these Swallows perching on some high bamboos. The sun was fast dispelling the thick night-fog that still hung low and

heavy, and the birds seemed in high spirits at the return of fine weather. They fluttered from branch to branch, and as they regained a footing, rocked backwards and forwards before recovering their balance. It was in April, and they were all paired, the male being always distinguishable by his larger size and longer tail. In pairs they sang, or rather twittered, their notes *kee-wee-keé*, like sounds that might be produced by some metal instrument sadly out of tune. The male loudly sang his bar, and the female followed on a lower key. The male then fluttered his wings and began again; the female followed suit. In this manner the whole clump of tall, graceful bamboos looked alive with these birds, and resounded with their strange notes. Some pairs would start away and pursue one another, at first, with a smooth, skimming flight; then in an excited manner they would stagger along and, fluttering their wings, sing lustily their notes of love.

18. *COTYLE SINENSIS* (J. E. Gray) : Ill. Ind. Zool. t. 35. fig. 3.
Hirundo brevicaudata, MacClell.

This small, grey-breasted, short-tailed species is a summer visitant to all suitable localities in the south of China, and is also found in all parts of Formosa, frequenting the steep sandy banks of rivers, into which it bores long galleries, constructing at the end of these its cup-shaped nest, and depositing therein three white eggs. Its winter migrations extend to the plains of Hindostan, where, curiously enough, it is reported by observers to nest again in the heart of winter (see Horsfield and Moore's List of Birds in the East Indian Museum, i. p. 96). This is, I believe, the only well-authenticated fact recorded of this long-suspected habit in migratory birds. It visits Formosa in April, and leaves again in October.

Length $4\frac{2}{10}$ in. ; wing $3\frac{9}{10}$; tail $1\frac{9}{10}$, subfurcate. Upper parts greyish hair-brown ; neck and breast much paler, dark on the sides of the breast. Wings and tail dark hair-brown ; axillaries hair-brown. Belly and vent white. Bill, legs, and claws purplish brown ; the feathered tuft in the joint between the tarsi and hind toe is wanting.

Some fifteen miles up the Tamsuy River, in a long sand-bank, I

found several rows of perforations made by this bird. The birds were flying in and out of them in great numbers, so we stopped to examine them. Most of the holes were out of arm's reach; and as the bank was very steep, and composed of loose mud, we had great difficulty in establishing a footing. We managed, however, after much trouble, to insert our arms into several of them. The holes were in all stages of progress, some only just begun, others scarcely a foot deep; in some the eggs were hard-set, in others quite freshly laid. The holes ran into the bank with only a slight inclination from the horizontal. In all instances they turned a little to the right, extending in depth to about 2 feet,—their diameter being from 2 to 3 inches, which is enlarged to a cavity about 6 or 8 inches broad at the bottom. In its cup-shaped base was placed the nest, composed of light straw and dried grasses and lined with feathers. One nest, however, had no feathers; but as it had no eggs, I concluded it was unfinished. The eggs in every case were only three in number, of a pinkish white, without spot or stain. On our disturbing the birds they rushed in consternation from their nesting-site, and after flying about low in the air at some distance in great agitation, they would meet together for some seconds as if in consultation. They would then again hurry off in different directions, and again meet. Finding we were in no hurry to leave their ground, they began to scatter and soar away to a considerable height. As soon, however, as we withdrew for a space, they returned, many diving at once into their burrows, others rushing backwards and forwards close past the holes, as if bewildered and afraid to enter. They were so numerous, and looked so small in the bright quivering light of a hot Formosan day, that they seemed to me at times more like Dragon-flies than birds.

♂, shot Oct. 10, 1861. Heart $\frac{4}{10}$ in. by $\frac{2}{10}$. Liver, right lobe $\frac{6}{10}$ in., left $\frac{4}{10}$. Œsophagus $\frac{1}{10}$ in. wide; proventriculus $\frac{3}{10}$ in. by $\frac{2}{10}$. Gizzard rounded, with a small lower protrusion, flattened, with strong tendons, $\frac{1}{2}$ in. long by $\frac{4}{10}$, and $\frac{2}{10}$ deep; epithelium thin, with broad longitudinal furrows. Testes transparent and oval, $\frac{1}{10}$ in. long. Cæca, 1 inch from anus, $\frac{1}{10}$ in. long, and thin. Intestine $5\frac{1}{10}$ in. long, varying in thickness from $\frac{1}{10}$ to $\frac{2}{10}$.

I find, on closely inspecting the Sand-Martins procured near

Peking, that I was wrong in referring them to this species. I am now willing to admit that the Russian ornithologists were right in identifying them with *C. riparia* (Linn.). The immature state of my Peking specimen led to this mistake; but I have lately submitted my Formosan and Peking skins to Mr. G. R. Gray, and he confirms my present opinion.

✓ 19. HALCYON COROMANDELIANUS (Scop.).

Alcedo coromanda, Lath.

A specimen of this was brought to me from the interior, of which the upper parts were orange-ochre, washed with a beautiful tint of lilac-pink; rump with a central streak of bluish white. Under parts fine orange-buff, whitish on throat and belly. Bill and feet red-lead; claws orange-ochre, brownish on their sides.

Length 9 in.; wing 5; tail $2\frac{9}{10}$. Bill from rictus to tip $2\frac{8}{10}$ in.

This beautiful species, which, strange enough, I never met with in China, is recorded from India, the Tenasserim, Sumatra, Borneo, and Japan, everywhere varying in size, length of wing, brilliancy of lilac tints, and size of the azure marking on the rump. In my specimen this last is reduced to a simple central line; but this I have also observed in specimens from other parts. Of the small Sumatran and Bornean variety Bonaparte has made his species *H. lilacina* (the *H. coromanda minor*, Schleg.), length of wing 4 inches; of the Japanese variety (the *H. coromanda major*, Schleg.), *H. schlegeli*, length of wing $4\frac{1}{2}$. But in our Formosan variety, which in local position is intermediate to the two, the wing is 5 inches. Further, the extent of this limb varies considerably in a series of skins which I have examined from Hindostan.

This species appears to be resident in Formosa, inhabiting the lakes and rivers of the interior of the island, but is by no means common.

The Coromandel Halcyon would appear, then, in these eastern regions to confine itself entirely to the islands, it never having yet been observed on the main of China, where its place is supplied by *H. smyrnensis*, L., and *H. atricapillus*, Gmel., the easternmost range of these two last being bounded by the coast-

line of China, and the northernmost in those parts, so far as yet observed, by the Yangtze River.

✓ 20. *ALCEDO BENGALENSIS*, Gmel. Chinese, *To-he-ang* (Little Fisher).

The little "King of the Shrimps" is as common throughout Formosa as in China. I have a large number of examples from both countries, and they do not offer the slightest variation. It ranges on the main from Canton to the Amoor, and is also abundant in Japan, being everywhere a resident species. The preceding and this are the only two species of Kingfisher that I noted in Formosa.

♀, shot Sept. 3, 1861. Œsophagus $\frac{2}{10}$ in. thick; proventriculus $\frac{3}{10}$. Gizzard somewhat heart-shaped, $\frac{8}{10}$ in. long by $\frac{6}{10}$; the muscular tendons scarcely observable; epithelium very thin, wrinkled longitudinally, stained light yellowish brown, and containing fish-bones.

✓ 21. *TCHITREA PRINCIPALIS* (Temm.).

Muscipeta principalis, Temm. Faun. Jap. pl. 17 E.

M. atricaudata, Eyton.

M. atriceps, Blyth.

The only time I noted this bird was in April 1862, in Tamsuy, when I procured a female. In the plains of the south-west during the summer it did not occur; hence I am of opinion that it does not nidificate on our island, but is merely a straggler during the migration season. Its summer habitat, so far as I have yet ascertained, is Japan, whither it crosses by sea, together with *Xanthopygia narcissina*, Schleg., from the coast of Fokien; for in April it suddenly appears, the males mostly in complete plumage, with the central feathers fully acquired, at Canton, at Amoy, and at Foochow. It is at that season abundant for a few days, then suddenly disappears, not a single one remaining to breed; and we do not meet with it till we reach Japan. In making the sea-passage to Japan, some would naturally touch at the coast of N.W. Formosa. North of Foochow, as far as Peking, another species with a red tail, the *T. incii*, Gould, is supplied as a summer visitor. I would hence infer, by continuing the line of migration in a south-westerly direction, that the interior of Cochin

China and Cambodia constituted the winter-quarters of this species. A species with a black tail, *T. atricaudata*, which Mr. Blyth considers identical with our bird, has been procured in winter plumage in Malacca. In autumn for a few days again we are visited by this bird, but it is then in its winter plumage and shorn of its handsome tail-appendages.

Xanthopygia narcissina, Schleg., and *Hypothymis cyanomelana*, Schleg., would also be naturally expected to touch at Formosa on their passage to Japan; but the latter of these may possibly cross the sea higher up the coast, as its summer migration extends right up to Peking. The former, however, is replaced in the north of China by a closely allied and more elegant white-eyebrowed species, the *X. leucophrys*, Blyth. I procured neither of these birds in Formosa.

✓22. MYIAGRA AZUREA (Bodd.).

Muscicapa cærulea, Gmel. *M. occipitalis*, Vigors.

M. cæruleocephala, Sykes (the female).

This is the common Flycatcher of Formosa, and is, I think, a resident species; for I observed it in numbers, as late as November, in the bamboo-groves of the south-west. It is more sparsely distributed in the hilly regions of North Formosa.

♂. Length $6\frac{4}{10}$ in.; wing 3; tail 3. ♀ of the same size, with rather shorter wings.

Male with upper parts and breast fine azure-blue, a patch of deep black on the occiput, and a deep-black band across the breast. Axillaries in part, and lower belly and vent, white. Wings and tail blackish brown, strongly washed with azure. Tail somewhat graduated, the tips of the feathers being pointed.

Female dingy azure on the crown, throat, and carpus, the breast and flanks being bluish grey. Upper parts brown, the tail only being washed with bluish grey on the outer webs of its feathers. Belly, axillaries, and vent white.

In fresh specimens of both sexes killed 6th August, 1861, the bill is light clear cobalt-blue, with black tip and edge. Legs and toes violet, with yellowish-grey soles. Inside of mouth greenish, yellower on the palate and tongue. Tongue concave, bulging at the sides, crenate at the tip and split, horny. Skin round the eye black; iris blackish brown. Ear small, oval, and

exposed, placed behind the plane of the eye. Skin of cheek and ear blackish grey. Almost immediately after death, the blue of the bill fades away and changes to leaden, and thence to black. The same thing takes place, but not so speedily, in the colour of the legs. The bills of young birds, until the spring moult, are blackish brown. I have observed this same evanescent nature in the blue bills and feet of several other birds, as also in the blue tints of many flowers, especially those that spring from damp ground and contain a large amount of moisture.

I dissected a female, shot 30th August, 1861. Œsophagus contracts to about $\frac{1}{10}$ in., then expands gradually into the proventriculus. Gizzard nearly round, compressed laterally, diameter $\frac{1}{2}$ in., depth $\frac{3}{10}$; epithelium furrowed with a network of rugæ, of a deep flesh-brown tint, containing Dipterous insects. Intestine $5\frac{8}{10}$ in., unusually white, $\frac{2}{10}$ at thickest part. Cæca small and adnate, $\frac{8}{10}$ in. from anus, the right one placed higher than left; both less than $\frac{1}{2}$ in diameter.

About Taiwanfoo and Apes' Hill this species is specially abundant, frequenting the numerous plantations of tall graceful bamboos. Among the thickest and shadiest boughs of these trees it loves to sit, uttering its harsh grating note, and quarrelling with every other bird that comes within its reach. Its flights after insects are short, and usually merely a skip from one bough to another. It nidificates much in the manner of the common Flycatcher (*Muscicapa grisola*) at home, building a deep purse-like nest of spider's web and catkins in the forks of tree-branches, usually preferring a branch that leans against a tree or wall. The eggs, numbering from 4 to 5, and rarely to 7, are, when fresh, pinky white, spotted, especially at the larger end, with deep madder-pink spots and light pinkish grey. They vary somewhat in size, the largest egg measuring .6 by .48.

23. HEMICHELIDON LATIROSTRIS (Raffles).

Muscicapa cinereo-alba, Schleg. Faun. Japon.

Visits Formosa in summer, but not in any numbers.

24. HEMICHELIDON GRISEISTICTA, Swinhoe, 'Ibis,' 1861, p. 330.

This species, which I first discovered in Amoy, also ranges to Formosa as a summer visitant.

	Length.	Wing.	Tail.
Dimensions of two males shot in April . .	5 $\frac{3}{10}$ in.	3 $\frac{2}{10}$ in.	2 in.
Female, same date	5	3 $\frac{1}{10}$	2

Bill blackish brown, just at base of gonys ochreous flesh-colour. Inside of mouth yellow, edge of rictus pale dusky yellow. Tongue flat, sagittate, broad, split at the end, and ciliated. Legs and toes black. Irides deep brown. A ring of white feathers encircles the eye. Upper parts, wings, and tail hair-brown, darker on the two last; greater coverts and tertiaries edged with brownish white. Under parts white, washed on the sides with light yellowish brown, the throat, breast, and flanks being streaked with long broad lines of deep greyish brown. In the female these spots are fewer and lighter.

25. PERICROCOTUS CINEREUS, Lafresn.

I witnessed a small flock of these only once, and that was at Taiwanfoo, S.W., on the 5th September, 1861. This species was originally described from the Philippines. In South China it is only seen and heard in the seasons of migration, roaming about the country with its undulating flight and canary-like chirp, and in a day or two it has disappeared. It passes its summer in the North of China, occurring even in Amoorland, and in early autumn turns down the coast to Amoy and Canton, whence it wings its way across the sea, touching the south of Formosa, to the Philippines for its winter-quarters.

In North Formosa I did not observe it, that being, I suppose, out of its direct route.

26. PERICROCOTUS GRISEIGULARIS, Gould, P. Z. S. 1862, p. 282. Native name, *Hee-ah* (Little Gem).

♂. Upper parts dull bluish black; cheeks and throat smoke-grey, much deeper on the former. Rump and under parts brilliant flammeous, somewhat mixed with golden yellow on the latter. Centre of the belly snowy white. Wings and tail black, the former having the transverse speculum, and the latter the marks on the outer tail-feathers, bright flammeous.

♀. Beautiful golden yellow on the under parts, wing-speculum, and markings on tail, where the males are flammeous or crimson-orange. Back olive-green; rump yellowish olive-green. Head

much lighter than in the male, and the throat greyish white, washed with yellow. Centre of belly snowy white. In the adult males the throat is quite grey; but in the majority of skins in my possession it is whitish, with an indication of yellowish. I have one male in the transition plumage, where the yellow-and-greenish garb of the female is brightening into the more highly tinted dress of the male. This gives us the plumage of the young bird, which is similar to the female, but more dully coloured, and at a younger stage probably mottled. In this transition state, this specimen teaches us that the yellow of the tail is the first to undergo a change, being here almost entirely red.

Bill and legs black; irides hazel. Tibial feathers in male black, ochreous on the inner side; in the female olive-grey, with yellow on the inner sides.

♂. Length 7 in.; wing $3\frac{1}{2}$; tail $3\frac{8}{10}$; tarsi $\frac{3}{4}$. ♀. Length $6\frac{1}{2}$ in.; wing $3\frac{4}{10}$; tail $3\frac{2}{10}$, of twelve feathers, the first three very short and much graduated, the rest nearly equal.

The nearest ally to this species is the *Pericrocotus solaris*, Blyth, from Nepaul and Bootan (figured in Gould's 'Birds of Asia,' i. t. 4). I have compared our bird with a skin of that species in my possession. The *P. solaris* is much browner on the upper parts than ours, and has the flammeous tints much less bright; but the chief distinctions are its bright orange throat and its orange thighs, which, from the above description, it will be seen are differently coloured in our species. The two species, however, run close, and, with numerous other birds as well as mammals, prove the affinity that the Formosan fauna bears to the Himalayan, rather than to that of the lower mountains of the Chinese coast.

In the hilly country of N.W. Formosa the *Hee-ah* is an abundant species, found all the year through. In the winter it associates in large flocks, many of these consisting almost entirely of males, and ranges about from wood to wood, and tree to tree, in the lower country. The females generally prefer remaining in the denser shelter of the mountain jungle, and do not evince such roving spirits as their lords; hence the small number of this sex that I was enabled to procure as compared with males. When on the wing, and in fact wherever they are, the *Pericrocoti* soon make their presence known by their peculiar

trilling note, which has some resemblance to that of a Canary, but yet differs from that of any other bird I know. All the species that I have met with in a wild state have the same style of note, though disagreeing in many minor respects, and by practice can easily be distinguished. On a bright sunny day to witness a party of these birds fly across a wooded glen is a magnificent sight, the brilliancy of their tints contrasting well with the sombre hue of the surrounding foliage. But it is a still more beautiful sight to watch a group of these pretty creatures, male and female, examining an evergreen tree for insects. They frisk and flutter about the leaves, throwing themselves into all sorts of positions, and assuming the most difficult attitudes, as if delighting, in the ordinary business of feeding, to show to the greatest advantage those charms with which nature has so amply endowed them. In summer they retire into the depths of the highest forests, whither it was impossible for me to follow them.

✓ 27. *GRAUCALUS REX-PINETI*, n. sp.

♂. Length 11 in.; wing $7\frac{1}{2}$; tail 5.

♀. „ 11 in.; „ 7; „ 5.

This is another inhabitant of the interior forest-covered mountains, a pair of which were brought to me by my hunters. It is called by the Chinese the *Sam-ong*, or Pine King, and is noted for its loud unmusical notes. It comes but rarely from its wooded haunts to the cleared ranges in the hands of the colonists, and I have thus had no opportunity of watching its habits. I have never met with any species of this genus in China, and, from the limited areas inhabited by all the insular species that I am acquainted with, I should be disposed to decide on the Formosan representative being peculiar, though all the forms of the *Campephaga* group run so close in the immature plumage, that it is often difficult to determine them without a careful comparison of adults. In our case, however, the difficulty vanishes, as both the birds procured are adults, the one a male, the other a female.

The bill and feet of the male are black; soles light dingy, with ochreous tints. The bill and feet of the female are rather lighter. In the male, the lores, space round the eyes, cheeks, and chin

are deep black; forehead and throat a lighter shade of the same. General plumage deep bluish grey, with a tinge of yellowish olive. Axillaries buff and white, somewhat mottled with grey. Centre of belly and vent white, the latter tinged with buff. Winglet, primary coverts, primaries, and rest of the quills black, the three first margined narrowly, the rest broadly, with the prevailing colour. The under wing whitish on the inner webs of quills; the fourth quill longest. Rectrices 12 in number, narrowest at their tips, the lateral feather being $\frac{6}{10}$ in. shorter than the rest. The two central rectrices blackish grey, with about an inch of black at the tip, margined with grey. The other rectrices vary in the amount of black, having at first a small white tip and narrow white margin, both these increasing in extent as you advance to the outermost feather, which is blackish to a greater proportion and more largely ornamented with white. My female differs from the male in having a rather longer and less deep bill, and in having no black on the region of the face. She has also the belly whitish instead of for the most part grey, and is there barred with light-grey striations. In other respects she is similar to the male, but is perhaps a little lighter. Both birds have many of the grey feathers throughout the general plumage with dark shafts.

The nearest ally to this species is the *Graucalus macei*, Lesson (*G. papuensis* auctorum, seu *G. nipalensis*, Hodgs.), which is larger, with larger bill, has much less black on the face, is of a lighter colour, and has no buff on the axillaries, besides differing in minor particulars of colouring and proportions. Our bird is a resident species, and is perhaps no more than a race of the *G. macei*, which is widely distributed throughout the tropical part of the continent of Asia, the rather slight variations being probably due to its isolated position. I may add that it has closer affinities with a Nepalese specimen from Mr. Gould's collection than with those from the Indian plains. For an account of the habits of *G. macei*, I must refer my readers to Horsfield and Moore's List, vol. i. p. 174.

28. DICRURUS MACROCERCUS, Lath.

Mr. Blyth has identified our Chinese Black Drongo with the

Indian bird that bears the above name. It is found throughout China, as far as the Amoor; but nowhere on the main did I observe it so specially common as at Formosa. Here, in all parts, both north and south, almost every bird you meet with is a Black Drongo, sometimes perched on the top of a tall bamboo, uttering its loud discordant metallic notes, at others skimming with long undulating flight across the country, chasing with quick turns an insect or small bird, or again seated demurely on the back of a lazy buffalo, waiting to snap the flies that swarm to torment his hide. In fact, you fancy yourself in the country of the Drongos. They may often be seen in large parties, though they never exactly flock together. A field may contain a dozen of them, perched on every available prominence; yet when they are alarmed, each individual thinks of himself alone, and rarely follows the direction of his companions. Some continue all the year through, but in March their numbers are greatly increased by fresh arrivals. They soon commence pursuing one another, and in April construct their nests in the shape of an oval cup, formed of fine twigs and grasses, and lined with finer dried grass and fibres. These they build on the waving branches of the bamboo, high up, so that it rests on the curving top, and sways with the tree to and fro to the lightest breeze. They are, however, firmly bound to their places; and I have often watched the female sitting quietly on the nest with only her long tail visible, while with each gust the tree-top nearly swept the ground. They lay from three to five eggs, white, with a few purplish-red specks, and usually have three broods in the year. During the season of incubation they become regular little tyrants, chasing all larger birds away from the locality. They seem at this time to have a particular aversion to Kites, Crows, and Magpies, all of which they pursue to a considerable distance, repeatedly striking at them with claws and bill, until the enemy is too far to be feared. Throughout the plains and lower hills of Formosa these birds abound, having a special partiality for bamboo-groves; but in China they are somewhat locally distributed. At Foochow, in the valley in particular, you find only a smaller grey species, but about the hilly ranges round this bird again occurs. The grey species is identical with *D. leucophaeus* of Malacca; but,

curiously enough, it seems almost entirely confined in China to the small 30 miles' area comprised by this valley, and there it is very common. It has also occurred at Amoy, but only as a very rare straggler.

Dissection of male shot 11th October, 1861. Heart $\frac{1}{2}$ in. long by $\frac{4}{10}$. Liver, right lobe $\frac{8}{10}$ in. long, left $\frac{6}{10}$. Trachea somewhat compressed at pharynx, which is covered on each side with strong muscles; the bronchi bulge at first, but narrow again shortly after, and continue of uniform size into the lungs. Oesophagus $\frac{3}{12}$ in. wide, very gradually widening towards the proventriculus, which is $\frac{4}{10}$ long by $\frac{3}{10}$ wide. Gizzard somewhat muscular, roundish, in diameter $\frac{9}{10}$ in., depth $\frac{1}{2}$; epithelium leathery, longitudinally furrowed, containing chiefly Coleoptera and Cimicidæ. Intestine $9\frac{4}{10}$ in., varying in thickness from $\frac{2}{10}$ to $\frac{4}{10}$; cæca, 1 inch from anus, $\frac{3}{10}$ long by $\frac{1}{10}$ wide, one placed a little higher than the other.

The young birds are brownish black on the upper parts, slightly washed with dark green. The wings and tail also brownish black, but more strongly washed with dark green, the feathers being obscurely edged with light brown. The under parts are blackish brown, a few of the feathers being faintly margined with a lighter colour. The edge of the wing and the axillaries are broadly striated with white. The moult comes on almost before the nestling has acquired full feathers, in the male the transition from the soft brown plumage of the young into the uniform glossy greenish black of the adult being at once accomplished; but in the female the white striæ and spots of the axillaries often continue for years. The feathers of the vent become almost white, and those of the breast and belly broadly margined with the same. The female does eventually assume the uniform colour of the male, but not entirely for the first three years of her existence. She can even then be always distinguished by her smaller size and her less-developed tail. The shape and proportions of the bill vary a good deal in my series of skins.

	Average length.	Wing.	Tail.
Male	11 inches.	6	$6\frac{2}{10}$
Female	$10\frac{1}{2}$ „	$5\frac{8}{10}$	$5\frac{1}{2}$

29. *CHAPTIA BRAUNIANA*, n. sp.

From the mountain forests of the interior country I procured several examples of a bird of this interesting genus of Drongos, which has hitherto comprised only two species, the *C. ænea*, Vieill., of Hindostan, and the *C. malayensis*, A. Hay, of Malacca. I may remark that no species has been yet recorded from China. Our bird is a constant denizen of the dense and lofty forests that clothe the central mountain-range of aboriginal Formosa, and make their heights almost impenetrable to aught but the stealthy savage. I never had the gratification of seeing the bird in its state of nature; but I was informed by my hunters that it is met with in small parties perched on the highest trees, whence it launches after the passing insect, much in the manner of other *Dicruridæ*, and that it possesses an agreeable song. The truth of their observation is entirely confirmed by Mr. Jerdon's remarks on the Indian species (see Moore and Horsfield's Catalogue, vol. i. p. 160).

The male and female of this species (which I have named after my assistant in the consulate, Mr. Braune) do not appear to differ.

Length 9 in.; wing $5\frac{1}{10}$; tail 5. Entire plumage black, somewhat smoky on the belly, and spotted with white on the axillaries. In some specimens these last are scarcely apparent. Upper parts, wings, tail, and carpal rim resplendent with deep metallic bluish green, showing purple in some lights. Bill and legs black. Irides blackish brown. In the young birds the whole plumage is black; but the first moult soon comes on, and develops the glossy feathers.

I have compared my Formosan with two fine specimens of *C. ænea* sent me by Mr. Atkinson from India. At first sight I pronounced them identical; but on closer examination, I think the distinguishing characters are quite sufficient to warrant their separation. They are both coloured much in the same manner, and both have white-spotted axillaries. But in all my skins, the bill, which varies *inter se* in size, is always shorter and much broader at the base than in *C. ænea*. It is also covered with feathers to a higher extent on the culmen. The feathers of the head and back are much shorter and rounder, and reflect purple and steel-blue instead of copper-green. The same colours pre-

vail on the breast of our bird, where the feathers are, on the other hand, much larger, and round instead of lanceolate. The wings and tail are black on the under parts instead of brown, and the former is nearly $\frac{1}{2}$ inch longer. The feathers of the tail are much broader, and the same purple and blue in all the glossy parts of our bird replace the copper-green of *C. ænea*.

✓ 30. *LANIUS SCHACH* (Gm.), var. *FORMOSÆ*.

L. chinensis, Gray.

The constant large size of the Chinese Shrike, in my opinion, justifies its separation from the small allied species of the Indian Archipelago, to which Gmelin's name is also applied; but as it was on a specimen brought from China by his disciple Osbeck that the great father of nomenclature founded the species, we cannot do otherwise than employ his name for our bird, leaving it to others to adopt some distinguishing designations for the smaller congeneric forms. I have traced our species from Canton to the banks of the Yangtze on the main, and within this area it is everywhere a common resident species. It has never been recorded from North China, nor yet from Japan; but throughout Formosa it is quite as abundant as in China. It is noticeable for its loud, screaming note; but when quietly perched on the bough of some tree, I have heard it sing, its song being a strange mixture of harsh discordant notes with others soft and melodious. When in a playful mood, it can mimic with great success the wail of the Kite, or the bark of a dog, and the cries of many other animals. It loves to perch on prominent places. It preys on mice and small birds, but more frequently on grasshoppers, cockroaches, and dragon-flies. Its nest is usually placed in the centre of a bush, six or seven feet from the ground, formed of flexible twigs, and lined with hair or wool, fine grass, and fibres. The eggs vary from five to seven, and are yellowish grey, spotted with yellowish brown and light grey, chiefly at the larger end. I have often taken a nest of this bird in which all the eggs were of a clear pinkish-white ground-colour and spotted as usual; but I have never seen them girdled with a brown ring, as is the case with some of those of *L. collurio*, L.

In this large Butcher-bird we have an apparent confirmation of the modern theory of development. I have a large series of skins from Amoy, many of which show a strong tendency to lapse away into other closely affine species. Some have the frontal band reaching almost to the occiput, and lean towards *L. nigriceps*; others have the head nearly grey, and incline towards *L. caniceps*; others have the tertiaries broadly margined with buff-white, thus approaching *L. erythronotus*. Many of the smaller species seem to be descendants from, or, at least, of the same origin as, the Chinese type, and, though varying among themselves, always carry characters sufficient to distinguish them. These Indian and Malayan forms are mostly smaller; but in Formosa we have a bird of the same size and habits, and indeed singularly identical in every respect with the Chinese bird, except in a few of its hues. From my large series of Chinese skins I can produce one example or two undistinguishable from the Formosan variety, and from my Formosan skins I find an occasional specimen entirely like the Chinese bird, and yet, taken as series, they might by some be separated as of different species.

The Formosan variety is much whiter on the under parts, the tint that pervades it being rosier and less ochreous than in the Chinese. In the majority of specimens the lower flanks and vent only are chestnut. The crown of the head is of a uniform colour with the hind neck, and not whitish grey. The tertiary quills are broadly margined with whitish chestnut; and the inner web of the first tail-feathers is black, instead of pale brown mottled with black. In this last the Formosan birds show a constancy, whereas the Chinese specimens have all proportions of black and pale brown. But, like the Chinese, the Formosan birds also evince a wonderful tendency to vary, some having the frontal black much higher than others, others the tertiaries margined with white instead of chestnut; others, again, have the first quills pale reddish brown, with scarcely any white spot on the wing.

Average length of male 10 inches; wing $4\frac{1}{2}$; tail $5\frac{1}{2}$. The female is usually smaller, with rather shorter wings and tail.

This group of Shrikes, with its comparatively short wings and

long tail, is not migratory, and would therefore seldom cross the eighty miles of sea that divides Formosa from China.

✓ 31. *LANIUS LUCIONENSIS*, Linn.

This species of the red-tailed group of Shrikes, of which *L. phænicurus*, L., is the type, is a summer visitor to Northern China, I having myself met with it as far north as Talien Bay. In spring and fall it abounds at Amoy for a few days, and then disappears, on its vernal migration into the interior and North of China; and in autumn across the sea to the Philippines, where it hibernates. In its line of migration it touches S.W. Formosa, and there we had its company for a few days in the early part of September. Its chattering note is very different from that of the preceding large species; and it is of more skulking habits, seldom showing itself in any conspicuous place. It possesses a melodious song of no mean capacity, but it is generally uttered in a subdued tone. It feeds on large insects, especially *Libellulæ*, but oftener, I think, on small birds, more particularly of the *Phylloscopus* group. The migration of *P. sylvicultrix*, nobis, unfortunately for that bird, takes the same route as that of this butcher, and consequently the latter always has his food at hand. The arrival of the one bird is slightly in advance of the other. My specimens from Formosa are identical with those procured from Amoy, whence I have an immense series of skins, varying in numerous instances, with strong tendencies in colouring to its congeners of the same group; but my remarks on them I must reserve for another paper which I have in preparation on the birds of China.

✓ 32. *CINCLUS PALLASI*, Temm.

I believe the Formosan Dipper to be the same as the Japanese bird, though I have not been able to compare skins. Our bird, when alive, has the bill and legs a dark leaden colour, the latter with a purplish tinge, the claws being whitish on the under parts. In dry skins, of course, these parts change colour, the bill becoming brown and the legs whitish; hence the Prince of Canino's mistake in giving as a character of this species, "rostro pallide fusco; pedibus albicantibus." I suspect that the bill

and legs in most, if not all, the species of this genus are of the same perishable colours.

Length about $7\frac{3}{10}$ in. ; wing usually about 4 in. (out of eight specimens the longest wing measures $4\frac{3}{10}$, the shortest $3\frac{6}{10}$) ; tail $2\frac{4}{10}$, of 12 feathers, nearly of equal length.

Adult: irides deep brown; general plumage sepia-brown, blacker on the head and under parts, and tinged with yellowish brown on the back and rump. The Japanese Dipper is said, in the 'Fauna Japonica,' to have the 2nd primary quill nearly equalling the 3rd, which is the longest of all. In all ours the 2nd is $\frac{2}{10}$ shorter than the 3rd, and the 3rd and 4th are equal in length, the 5th being a little shorter. If this is a sufficient character, perhaps ours is a distinct species, as by isolation it should ere this have become, it being a resident on the island, and not migratory. When I first discovered the bird, on my second visit to Formosa in 1857, I described it as probably new, under the term *Hydrobata marila*. It may be found, on comparison with the true *Cinclus pallasi*, Temm., to be distinct enough to require a name of its own.

This bird must nest early, for in April fully-moulted young of the year were already abroad. In this stage the irides are lighter, the inside and angle of mouth light yellow, the bill flesh-brown, and the legs purplish flesh-colour with a slaty wash. The upper parts are deeper brown than in the adults, being obscurely spotted on the back and rump with a lighter reddish brown; these spots are more distinct on the upper tail-coverts, which are entirely tinged with reddish; most of the feathers of the upper parts are margined with black. Feathers of the wings edged and tipped with light sepia and whitish, the ground-colour being much blacker than in adult wings. Throat whitish, finely striated with sepia. The rest of the under parts deep blackish sepia, the feathers on the breast and flanks being margined with light reddish brown, on the axillaries and belly with whitish. I have taken this description of the immature bird from two specimens in my collection, procured in N.W. Formosa in April.

This bird is usually met with on the mountains some 2000 or more feet above the sea, frequenting the sides of solitary cascades, which abound in the hilly parts. There, like the rest of

its tribe, it feeds on freshwater insects, Crustacea, and Mollusca. I met with it on one of my rambles into the hills. It was perched on a large slab of rock that stood in a running stream. It kept throwing up its tail like a Wren, and, hopping to the edge of the stone, dashed into the water; in a few seconds it reappeared at the surface and regained the rock. Till then I was not quite sure what bird it was; there was no longer any mistake. My time was short, and I could watch no longer; so I secured my specimen and went my way. It was a likely place and season for its nest, but in my hurried search I could not detect it.

33. PETROCINCLA MANILENSIS (Bodd.).

In Formosa you find this species as it is generally known, with blue upper plumage and breast and red belly. In all my numerous specimens the colours are always uniform. But in Amoy the red belly is by no means constant; I have several skins entirely blue, and others again with all proportions of red and blue. This, however, does not appear to be the case in the Formosan bird; so we will not here discuss the question of the validity of the species.

The female retains the mottled plumage through life; but the young male in the first autumnal moult shows a good deal of blue on the back and throat, and red on the lower parts: the plumage becomes more defined in the following spring; but the mottles do not entirely disappear till the close of the second year, and often not then.

	Length.	Wing.	Tail.
Male	$8\frac{1}{2}$ in.	$5\frac{2}{10}$ in.	$3\frac{4}{10}$ in.
Female	$8\frac{1}{2}$	$4\frac{8}{10}$	$3\frac{2}{10}$

Both sexes vary somewhat in size, as also in the length of the wing. My measurements are from full-sized examples.

This bird is partial to rocky hills near the sea. Its song is very sweet, and is often uttered on the wing. It builds its nest in the hollows and clefts of rocks and walls, adapting it to the shape of the chosen locality, and constructing it of fine flexible twigs, lined with fine grass, wool, and occasionally a few feathers. These are loosely put together, without much art. It lays from three to five pale greenish-blue eggs. In autumn, after the first moult, the young leave the hills and frequent the housetops of

the town, about which they are constantly to be seen chasing one another, and singing their agreeable notes.

34. *OREOCINCLA HANCII*, n. sp.

I have two Thrushes of this form, one shot at Amoy, and the other in North Formosa. They are both males, and both procured in March, when the adult plumage ought to have been acquired. They are of about the same size, and differ very triflingly, if at all, in their bills and legs. The Chinese bird has a white throat, and is marked with rich olive and ochre; the Formosan has a spotted throat, and has scarcely any of the rich ochreous tinge. Birds of the same species often vary in colour; and these differences, therefore, are hardly worth noticing, except in connexion with the measurements of the wings and tail. The Formosan has the 2nd quill nearly half shorter than the 3rd, whereas the Chinese has it not quite $\frac{3}{10}$ shorter, and the whole wing of the former is $\frac{6}{10}$ longer than that of the latter. The tail, too, of the former is longer and somewhat more graduated. All these, however, may be only individual peculiarities. In the true Thrushes, size and proportions are very various, and probably also in the *Oreocinclæ*. And as to variety in colour, we need not go to the allied *Turdi*; compare only the young *Oreocinclæ* with the adult bird. I have, nevertheless, thought it right to consider the Formosan provisionally as a distinct species. The Chinese bird I believe to be the true *O. aurea* (*Turdus whitei*).

Length $11\frac{1}{2}$ in.; wing $6\frac{8}{10}$; tail $4\frac{1}{2}$, of 14 feathers. Upper mandible and apical third of lower blackish brown, the rest of lower and edge of upper being light brownish flesh-yellow. Legs light flesh-ochre, deeper and browner on the toes. Claws brown, with pale edges. This specimen was brought to me on the 20th March, by my hunters, from the mountain forests of the interior. I never met with it alive in Formosa. The Chinese bird I have only seen twice, both times in our garden at Amoy, which they visited two years running, for the sake of the banyan-figs, which were then ripe. The only note I heard them utter was a long-drawn "seep," like that of our other Thrushes*.

* I have named the Formosan *Oreocinclæ* after my friend Dr. Hance, Her Majesty's Vice-Consul at Whampoa, so justly celebrated for his researches in Chinese Botany.—R. S.

35. *TURDUS CHRYSOLAUS*, Temm. Pl. Col. 537, and Faun. Japon.

This is the only Thrush we procured in mature plumage. In spring, from February to April, I observed large numbers of this and the following several species about the neighbourhood; but, from their being in parties and soon again disappearing, I think they only touched our coast on their northward migration. This species was, however, occasionally seen in pairs, and frequently procured in full plumage; and, from this, I fancy it may stay with us to breed, though I have no actual proof of the fact.

36. *TURDUS PALLIDUS*, Gm.

T. daulias, Temm. Pl. Col. 515, and Faun. Japon.

Numbers observed and procured at Tamsuy, but not one mature bird.

One of this species paid frequent visits, in January 1862, to our garden at Tamsuy, and I had then opportunities of closely watching its habits. He used to hop about over the weeds with a stately movement. He stands upright, and turning his head on one side with a knowing look, as if something caught his eye, makes a bob forward and grapples the head of a worm, which he extricates from its hole by repeated hops backwards. The worm is in his bill. He stops for a second as if to take breath, then hammers it against the ground, shaking it at times like a terrier shakes a rat—then gulp, and the worm disappears. But its size was large, and its moribund wriggling down the œsophagus seems to produce a little inconvenience to its destroyer, for he ruffles his feathers and appears discomposed. It is only for a second; he stoops his head and runs forward, with hurried step, under an archway of tangled grass, and emerging further on, continues his inspection of the rain-moistened mould, chuckling to himself in a half-subdued tone, as if rejoicing at his luck in having selected such a well-stocked beat. He stops and raises his head, he hears a noise. The intruder alarms him, and with a louder chuckle, preceded by a long sibilant “*see*,” he wings into an adjoining tree, opening his tail in flight sufficient to display the white spots that ornament its lateral feathers. In his retreat he keeps on muttering a chuckle at intervals. At

last his impatience gets the better of him; with a loud cry, resembling the syllables "*quack, quack*," he flies right away.

37. *TURDUS OBSCURUS*, Gm.

T. pallidus, Temm.

T. pallens, Pall.

One female procured at Tamsuy in spring.

38. *TURDUS FUSCATUS*, Pall.

Immature birds common at Tamsuy in spring. Several procured, but none in complete plumage.

39. *TURDUS NAUMANNI*, Temm.

A female straggler shot, 19th February, at Tamsuy, in immature feathers.

Length 10 in.; wing $6\frac{1}{10}$; tail $3\frac{6}{10}$. Bill black, except gape, basal edge of upper and basal half of lower mandibles, which are gamboge-ochre. Rim round the eye light brown; iris deep brown. Ear-covert large, pale yellowish ochre; operculum oval, and placed near the upper arc. Legs and claws pale dingy brown, with scarce a tinge of yellow. Proventriculus $\frac{7}{10}$ in. long by $\frac{3}{10}$, contracting before the gizzard, which is $\frac{7}{10}$ long, $\frac{6}{10}$ broad, and $\frac{4}{10}$ deep, with moderately muscular tendons; epithelium thick, leathery, and yellowish, longitudinally furrowed with broad rugæ. Intestine $11\frac{3}{4}$ in. long, thick and fleshy, with plenty of fat, which especially abounds over the belly; cæca $\frac{3}{4}$ from anus, $\frac{3}{10}$ long.

I observed no Blackbird in Formosa.

40. *MYIOPHONUS INSULARIS*, Gould, P. Z. S. 1862, p. 180.

The genus *Myiophonus* has been split up into two subgenera, *Myiophonus* and *Arrenga*, the former comprising the species with lanceolate feathers, spotted as with dried gum, and having white spots on the wing-coverts, and the latter those with rounded feathers and bright-blue wing-coverts. The former section at present contains three closely allied species representing each other in their respective localities, viz. :—

1. *M. temminckii*, Vigors (Gould's 'Century,' pl. 21), with moderate, yellow bill. *Hab.* Himalayan range, as far as the Tenasserim provinces.

2. *M. flavirostris* (Horsf.), (*Turdus flavirostris*, Horsf. Trans. Linn. Soc. xiii. p. 149 : *M. metallicus*, Temm. Pl. Col. 170), with a very large yellow bill. *Hab.* Java.

3. *M. cæruleus* (Scop.), (Selater, 'Ibis,' 1860, p. 55), with small black bill. *Hab.* Hills of Southern China.

The subgenus *Arrenga* has hitherto comprised only the two following forms :—

1. *M. cyaneus* (Horsf.).

Turdus cyaneus, Horsf. Trans. Linn. Soc. xiii. p. 149.

Pitta glaucina, Temm. Pl. Col. 194.

A small species from Java, purplish on the upper parts and blackish brown on the lower.

2. *M. horsfieldii*, Vigors (Gould's 'Century,' pl. 20).

A larger species, dark, with very bright-blue shoulder-mark and frontal band, from the Nilgiri Hills, India.

To this last group our bird belongs, and to the last species in particular it is closely affine.

Note on a specimen shot at Tamsuy, 27th March, 1861.—Length $13\frac{2}{10}$ in.; wing $6\frac{1}{2}$; tarsi $2\frac{1}{8}$; tail $5\frac{2}{10}$, of 12 feathers, somewhat graduated, giving a rounded form to the tail when expanded; rectrices broad and rounded, each feather pointed at the shaft, which projects $\frac{1}{10}$ in. beyond the web (this is so in all the specimens, and I think is partly due to the abrasion of the web). Bill, legs, and claws black. Tongue horny, concave, rounded at the tip, which is split into two sets of cilia; inside of bill and tongue blackish olive, paling into light dingy olive-yellow flesh-colour as it descends to the glottis. Iris deep brown. Ear very small, round, and white, the aperture being round and central. Plumage purplish black. Lore and band over bill deep black; above this an obscure band of purplish blue. Feathers of breast and belly broadly margined with ultramarine or purplish blue; small wing-coverts near the shoulder margined with a bright tint of the same. Wings and tail black, washed with purple, chiefly on the outer webs of the feathers. Feathers of the flanks and belly having the greater part of their basal webs white; those of the remaining feathers of the body

pale black. The female is similar to the male, but rather smaller.

M. horsfieldii is at once distinguishable from the Formosan bird by its very bright blue frontal band, by its brighter blue shoulder-mark, by its head and upper back being quite black, by its having no white on the basal part of any of the feathers, by its wing being $\frac{1}{2}$ inch shorter and rounder, and by its tarse being about $\frac{3}{10}$ shorter. The basal whiteness of the ventral and flank feathers occurs in the small Javan species, *M. cyaneus*, as also in the three typical *Myiophoni*.

The Formosan Cavern-bird haunts the dark wooded ravines in the interior mountains, seldom descending below the level of 2000 feet. Like the Chinese species, its favourite position is on a large boulder of rock on the side of some torrent, whereon it stands, expanding and shutting its tail like a fan, and occasionally throwing it slightly up. It is easily startled, running, rather than hopping, over the surface of the rock, and flying off with a loud screaming note. It possesses a short, somewhat pleasant song. In its manners and habits it seems to connect the Thrushes and *Petrocinclæ* with the *Pittæ*, which also love the neighbourhood of mountain streams. The shape of its ear is most peculiar, and almost exactly similar to that of the *Henicuri*, which are also cascade-loving birds. The birds dissected contained usually remains of Coleoptera and their larvæ.

✓ 41. GARRULAX TAIVANUS.

Garrulax taiwanus, Swinhoe, Journal of As. Soc. of Shanghai, No. 2. p. 228.

The *Hwa-mei* (Flowered-Eyebrow) or Song-Thrush of the Chinese is so universally met with as a cage-bird in China, that every European possessed of ordinary observation that has visited the Celestial realm must be acquainted with it; yet sad confusion exists in its nomenclature. There is a species from Tenasserim with a white cheek, which has frequently been mistaken for our bird. An Indian *Malacocercus* has also been confounded with the Chinaman,—for a genuine Chinaman I take him to be, confined in distribution to the hilly country of Southern China. We have not to run far for a name for the

Chinese bird ; only look to Linnæus's 'Systema Naturæ,' where, under the head of *Turdus sinensis*, the description shortly and admirably applies to this bird. It runs thus :—"T. rufescens, capite fusco striato, superciliis albis, rectricibus fuscis strigis obscurioribus, pedibus flavis.—*Turdus sinensis*, Briss. Av. ii. p. 221 ; Hoamy de la Chine, Buff. Hist. Nat. des Ois. iii. p. 316."

Osbeck, who visited Canton, could have made scarcely any collection without including the bird best known to all Chinamen.

In China the *Hwa-mei* is a true hill-bird, and never met with on the plains or low country, where its place is supplied by the large *Garrulax perspicillatus*, L. I have traced it from Canton to Foochow ; and I suspect it may extend to Ningpo, but certainly not further north.

The Formosan *Hwa-mei* (or *Hoe-be*, as the word is there pronounced) is both a hill-bird and a frequenter of the plains. In the hills, however, it is not common ; and I do not think it there ranges to a greater altitude than 2000 feet. On the plains it is everywhere excessively common, being found in the bamboo-plantations, hopping, with curved back and rounded tail, from bough to bough, fluttering its short distances from tree to tree or bush to bush, and frequently singing out lustily its loud notes. Its song is rich and powerful, abounding in a great variety of notes, many of which have a strong resemblance to those of the Blackbird and Thrush (*T. merula* and *T. musicus*) ; but, unless heard at a moderate distance, the noise almost deafens you. I think the notes of the Formosan bird rather finer than those of the Chinese ; but in this the Chinese settlers, naturally preferring the products of the mother country, do not agree with me. The *Hoe-be* is not particular in the choice of its nesting-site ; it sometimes builds in a bush close to the ground, often at various heights, and at others on the bough of a tree. The nest is small and compact, rather flattened, cup-shaped, and formed of coarse grasses and fibres exteriorly, lined with fine dried grass. The eggs vary from three to five, and are of a rather deep greenish-blue colour, without spot or stain. They vary a little in size, averaging in length .91, in breadth .72.

Note on a fresh specimen shot at Taiwanfoo, 8th Aug. 1861.—

Length $9\frac{1}{2}$ in.; wing $3\frac{6}{10}$; tail $4\frac{4}{10}$, of twelve graduated feathers, the outermost being 1 inch shorter than the central. Wing rounded, the 5th, 6th, and 7th quills being nearly equal and the longest in the wing. Bill wax-yellow, brownish on the culmen and tip; inside of mouth yellow. Iris light greenish grey. Skin round the eye and ear purplish violet. Ear large and oval, aperture exposed. Legs yellowish flesh-colour washed with brown; claws brownish. Crown, back, sides of breast, and flanks greyish olive; ochreous white on the forehead, the crown and upper back being streaked broadly with blackish brown. Rump and wings olive-brown, greener on the former; the latter being hair-brown on the inner webs, with dark shafts. Tail brown, barred with a deeper shade and margined with olive. Throat, loreal region, and breast ochreous, faintly streaked with deep brown. Centre of belly smoke-grey. Under wings rust-coloured ochre; vent and tibial feathers brownish ochre.

The Chinese *Hwa-mei* is of the same size and proportions, with the same form of wings and tail; but it is much ruddier, has rather a longer bill, only faint indications of stripes on the crown and hind neck, and a fine clear white mark round and past the eye, like a spectacle. I have a very large series of the Formosan species from several localities in Formosa, and in all, the characteristic markings are constant: but one or two specimens have an indication of the white eyebrow, a few of the feathers being quite white; in one nestling in particular the white eyebrow is distinctly marked. The distance between China and Formosa is too great for the slightest probability of either species of these short-flighted birds crossing over to the opposite coast; we must, therefore, look to some other cause for the striking resemblance between the two forms.

The nestling is very similar to the adult bird, but is of a deeper colour, has scarcely any indications of the thin stripes on the throat and breast, and no smoke-grey on the belly. Its iris is of a rich brown colour.

The female is scarcely distinguishable from the male, except by her rather smaller size and shorter tail.

The range of this species in Formosa appears to extend throughout the entire champaign country and lower hills. I

have seen and procured it from Sawo, on the eastern coast; Kelung, north; Tamsuy, N.W.; Taiwanfoo and Apes' Hill, S.W. It feeds on almost every creeping thing of the great insect-family, and occasionally on birds of the *Prinia* group. I have frequently taken entire birds'-eggs out of its stomach. It searches throughout the bushes more diligently than any schoolboy for the nests of small birds, and ruthlessly sucks the eggs and devours the young. In this character, as well as in some others, it approaches the Jays; but I think its affinities are more decidedly *Turdine*.

42. *GARRULAX RUFICEPS*, Gould, P. Z. S. 1862, p. 281.

This species frequents the central wooded range of mountains, and very rarely descends to the lower hills that flank the Chinese territory. I never met with it alive, and my hunters only succeeded in procuring one pair. It differs entirely from any of the Eastern-Asiatic forms of *Garrulax*, but, strange enough, has characters largely in common with a species from Bootan and Mussoorie (India), the *G. albogularis*, Gould.

Length $10\frac{1}{2}$ in.; wing 5; tail 5. Bill black. Loral space round eye and chin black. Crown of head bright rufous; cheek light-rufous olive; upper parts brownish olive. Wings hair-brown, broadly margined with olive, the tertiaries being almost entirely of that colour. The 6th quill-feather the longest in the wing; the 5th and 7th being equal, and slightly shorter than the 6th. Tail rich olive-brown, greyer on the two central feathers, which are unspotted; the next one has a whitish mark at the tip; the 3rd a broad white mark, which increases in size, until, on the lateral feathers, it is $1\frac{4}{10}$ in. deep. Tail graduated, the outer feather being $1\frac{1}{10}$ in. shorter than the central ones. Throat and lower neck pure white; the centre of the belly not quite such pure white. Sides of the breast of the same colour as the back. Flanks, axillaries, and tibiæ brownish ochre or buff; vent pale buff. Under part of shafts of quills and tail-feathers whitish, and under edges of inner quills rufescent. In the pair I have, there is scarce any difference as to size or colour. Tarsi 1.85 in. long.

In *G. albogularis* the entire belly and flanks are of a decided

reddish ochre, and the crown of the head is of a uniform colour with the back. In other respects it has a strong resemblance to our bird.

✓ 43. *GARRULAX PÆCILORHYNCHUS*, Gould, P. Z. S. 1862, p. 281.

This is a commoner bird than the last in the forest-ranges near Tamsuy, but, like it, never descends to the lower unsheltered hills. It is a noisy, chattering species, assembling several together in the underwood, and keeping up an incessant jabbering, with frequent loud, discordant cries interspersed. It is sly and vigilant, and tries to elude observation, generally escaping from the opposite side of the bush it is in, with short flights to the next, and so retreating from approach. In the *Cinclosoma cæruleatum*, Hodgk. As. Res. xix. p. 147, from Nepal, we have a close representative of this species, with similar brown upper plumage and scaly head; but that species is easily distinguished from ours by the white on its under parts.

Length $10\frac{1}{2}$ in.; wing 5; tail $5\frac{2}{10}$; tarsi $1\frac{1}{2}$. Wing having the 6th feather rather the longest, the 7th slightly shorter, and the 5th rather shorter again. Bill: not quite the entire apical half bright ochre-yellow with a greenish tinge; basal portion greyish black. Legs brownish grey, with light-brownish soles and brown nails. Sexes alike. General plumage a bright reddish brown, redder on the head, tertiary edges, and tail. There are some black bristles about the bill, and the ear is covered by coarse, bristly, black feathers. The feathers of the head are narrowly margined with black; the primary and secondary quills deep brown on the inner webs and shafts, their margins, especially those of the former, being paler than the general colour. Tail obscurely barred with a shade of brown, more distinctly when the feathers are new, but the bars almost entirely fading away with wear; the two outer feathers terminating with pale, almost whitish spots; outermost feather $1\frac{2}{10}$ in. shorter than central. Belly and flanks deep smoke-grey, brownish on the tibiae; vent buff-white. Under wings brown; under shafts of wings and tail whitish.

44. *POMATORHINUS MUSICUS*, Swinhoe, Journ. As. Soc. of Shanghai, vol. ii. p. 228. (Plate VI.)

In 1857, in my voyage round Formosa in H. M. S. 'Inflexible,' I first came across this species, and described it under the above name at a meeting of the North China Branch of the Asiatic Society at Shanghai. It is a very abundant species throughout all the flat country and lower hills of Formosa. In every grove and plantation you are sure to find some of this species in small parties or in pairs, and frequently in company with the common *Garrulax taivanus*. They have also much the habits of that group, collecting in a bush and chattering loudly together, or hopping from bough to bough, with rounded back and rounded, partially expanded tail. They have also the same affectionate manners towards one another, sidling together on a bough, and rubbing and pecking one another coaxingly. Like *G. taivanus*, they breed twice, and sometimes thrice, during the summer, building in the same sort of places and of similar materials, but making larger nests of a rounded form. Their eggs are of a somewhat glossy *white*, and are generally three in number; they measure $\cdot 9$ by $\cdot 62$. Their food consists of Coleopterous and other insects; but they have a great partiality for the large *Cicadæ* and their larvæ, thus rendering a great service by thinning the numbers of these noisy pests. I have never found remains of birds in their stomach; and indeed, judging from their bills, I do not well see how they could destroy birds. Like others of the *Garrulax* group, if their food is too large, they hold it down under their claws while they peck it to pieces with their bill. Some species of *Garrulax*, I am told, attach their prey to thorns, like the *Laniidæ*, but this I have never observed. This bird occasionally throws its tail from side to side, but never at right angles like some of the smaller Australian *Pomatorhini* and the little *P. stridulus* of Foochow.

There is not much music in its ordinary call-note; but when two or three are met together, and vie with one another in their strains, the effect is pleasing, though their melody is not to be compared to that of the *Hwa-mei*. When at rest in the middle of the day, hidden in some sombre hill-side wood, they keep on uttering at intervals a series of very liquid notes in regular

cadence. These have an indescribably hollow and unnatural sound, and at first puzzle the listener to know whether they are produced by beast, bird, or insect.

The nearest Indian ally of this species is the *P. ruficollis*, Hodgs., from Nepal. This is, however, a much smaller species, and more nearly affine to my *P. stridulus* of the Southern Chinese hills. I give the measurements from three freshly-killed individuals; the first a male, shot 8th August, 1861, at Taiwan-foo, and the two following females, shot 10th February, 1862, at Tamsuy:—

♂.	Length	$8\frac{2}{10}$ in.;	wing	$3\frac{2}{10}$ in.;	tail	$3\frac{4}{10}$ in.;	} tarse $1\frac{3}{10}$ in.
♀.	„	$8\frac{2}{10}$;	„	3;	„	$3\frac{1}{2}$;	
♀.	„	$8\frac{1}{2}$;	„	$3\frac{2}{10}$;	„	$3\frac{1}{2}$;	

From these it will be seen that the size varies somewhat in individuals; but from my large series I do not learn that there is any special sexual difference of size, nor even of colour.

Upper mandible brownish black; under and apical edge of half upper flesh-white, with wash of lemon. Inside of mouth pale lemon flesh-colour. Tongue horny, except centre towards base, which is fleshy, sagittate, bulging a little on the sides about the middle, concave, following the curve of the bill; top ciliated, with a round brush. Ear horizontally oval, aperture occupying lower two-thirds. Edge round iris black; iris straw-yellow. Legs dusky leaden grey, whitish on edges of scales; claws and toes dingy ochreous grey.

Throat and eyebrow white. A black line runs from the bill past the eye, over the ear-coverts. Crown deep olive-grey, the feathers being marked centrally with black, those on the forehead having white markings, and those over the eye-streak being almost entirely black. A bright rufous band runs from one side of the breast over the back to the other. Upper parts olive-brown, tinged with rufous. The 5th quill longest in the wing, the 6th slightly shorter; quills hair-brown, margined with light olive, the tertiaries more margined and washed with the colour of the upper parts. Tail graduated, the feathers rounded at the tip, the lateral feather being $\frac{8}{10}$ in. shorter than the central; the whole hair-brown, obscurely barred with a deeper shade, mar-

gined, especially near the base, and washed with olive. Under wing-coverts, flanks, and sides of belly rich rufous, more or less tinged with olive. The central quills of the wing on the under side pinkish ochre. Breast and centre of belly white, the former being largely spotted with black. These spots in some specimens are very scanty, in others rufous or rufescent, and in others consist of mere streaks. In most specimens the belly is spotted with large rufous spots; and in many the rufous on the flanks is largely encroached upon by the white of the belly. The tibiæ and vent in all are of the colour of the back.

The young bird is rather browner, but in other respects similar to the adult.

I have specimens of this bird from Taiwanfoo, Apes' Hill, Tamsuy, Kelung, and Sawo, and they are all of identical form and colouring.

45. *POMATORHINUS ERYTHROCNEMIS*, Gould, P. Z. S. 1862, p. 281.

This species replaces in the central mountain forests the preceding species of the lower country. It rarely, if ever, descends to the ranges below an altitude of 2000 feet, and certainly never leaves the gloom of the virgin forest for the partially wooded level of the plains. It enters upon its nidificatory duties much earlier than its congener, for in April I procured a couple of full-fledged young birds. I have never taken its nest, but had the good fortune to procure an egg which a female dropped as it fell wounded to the ground. This egg is white, and quite in character with those I possess of the other species, but larger, measuring 1.2 in. by .81. From its inaccessible haunts, I have not had many opportunities of watching the habits of this bird; but, as far as I can gather, they a good deal resemble those of its ally. Its notes are, however, harsher and less musical. Both the species are entirely insectivorous, having no partiality, so far as I could ascertain, for fruit or berries.

Length $9\frac{1}{2}$ in.; wing $3\frac{8}{10}$; tail 4. These measurements are from dried skins. Bill along culmen 1.3 in.; from angle $1\frac{1}{2}$; tarsi 1.47.

Bill much curved, blackish grey, with pale edges. Legs leaden

grey; claws brownish. Iris light reddish brown. Feathers near nostrils, spot on cheek, greater part of tibiae, vent, and edges to some of the breast-feathers bright rufous. Crown and moustache dull black, the feathers of the former edged with deep olive-grey. Sides of the neck, flanks, axillaries, and basal portions of tibiae olive-grey, somewhat rufescent. Back and wing-coverts rufous brown. Quills and tail deep hair-brown, deeply margined and washed with rufous brown; the 4th, 5th, and 6th primaries nearly equal, and longest in wing; under part of central quills whitish. Rectrices oval at end, graduated, the lateral feathers being $1\frac{2}{10}$ in. shorter than the central. Throat, breast, and belly white, the breast being adorned with a few very large black oblong spots.

In the young bird the bill is much shorter and less curved, the head is browner, and the back and upper parts more rufous; but the under parts are dingier, and the colours generally not so bright as in the adult.

✓ 46. *HYPSIPETES NIGERRIMUS*, Gould, P. Z. S. 1862, p. 282.

General plumage black, shot with dark green, especially on the upper parts, the wings and tail being edged with bluish or charcoal smoke-grey. Upper mandible of bill somewhat serrated on the apical half. Sexes similar, the female having rather shorter wings. Bill and legs brilliant coral-red; sole-pads and bases of claws dingy ochreous; claws black. Inside of mouth and tongue orange-red. Tongue horny, and turned up at the edges, which in the apical third are split up and overlap one another. Skin of eyelid black; iris deep chestnut. Ear-covert roundish, not quite so large as eye, with a large quadrilateral central aperture. Length $9\frac{8}{10}$ in.; wing $4\frac{8}{10}$; tail $4\frac{1}{10}$. A large banyan-fig was found sticking in the throat of this specimen.

The first quill rather short; the 4th the longest in the wing, being $\frac{1}{12}$ in. longer than the 5th. Tail of 12 feathers, their shafts slightly projecting; the four central feathers about $\frac{2}{10}$ in. shorter than the others, giving to the tail a somewhat forked appearance; lateral feathers curved outwardly. In many of the specimens the feathers of the belly, axillaries, rump, and vent are margined with bluish grey.

In the young birds the plumage is much browner, and the feathers of the under parts margined and tipped with greyish white. All my specimens were procured in the spring of 1862, but many of them still retain markings of the immature plumage, thereby showing that the autumnal moult is not a complete transformation of the young into the mature plumage. In the adult the wings are brownish black, the quills, especially the secondaries, being broadly margined with bluish grey; the wing-coverts are also black, but less distinctly margined. The tail is brownish black, all the feathers, except the outermost, being margined exteriorly for the greater part of their length with bluish grey. The feathers of the crown are long and lanceolate.

The nearest allies of this species are the *H. psaroides*, Vigors, from Nepal, and the *H. ganeesa*, Sykes, from Assam, both of which are of blackish-grey plumage, and both have, like it, red bills and legs. I know no similar species from China. The only bird of this genus that I have seen from the hills of Southern China is a green species—my *H. holtii*—very closely allied to *H. maclellandi*, Horsf., from Bootan and Nepal. The Formosan bird is at once distinguishable from its Nepalese cousins by its much blacker colouring; hence the appropriate name suggested by Mr. Gould. This species is found in all the wooded parts of the interior mountain-range, feeding largely on berries and the small figs of the numerous species of *Fici* that abound, including those of the Chinese Banyan (*F. nitida*). Insects also form part of its subsistence, chiefly small Coleoptera. It rambles in small parties, in winter, about the high country, and may be found at all altitudes that are clothed with forest. In the spring these parties break up, and the birds disperse for the purpose of nidification. At this season a few pairs may be found in the better-wooded portions of the low country.

On my trip into the interior in the latter half of April, I observed one of these birds in an orchard composed of venerable moss- and fern-covered trees. It perched on the highest twigs of the trees, giving utterance to its song, which consisted of the notes “*swee-swee-swee*,” repeated loudly and in quick succession. There was not much melody in it. When it observed me, it flew to a further tree, whence finally I shot it.

These birds are longer-winged and smarter in flight than the *Pycnonotidæ*, but as regards general habits are closer in their affinities to them than to any other group.

✓ 47. *IXOS SINENSIS*.

Muscicapa sinensis, Gmel.

Turdus occipitalis et palmarum, Temm.

Pay-tow-kok of Amoy and Formosan Chinese.

This is the commonest of the *Pycnonotidæ* in Southern China ; it is said to be also very common in the Philippines, and in Formosa is our only species, being found in great abundance throughout all the low country. My specimens vary chiefly in the proportions of white and black on the head. I have one peculiar variety from Amoy. The Formosan form is essentially identical with the Chinese bird, having no special peculiarities of its own. It is, however, a bird abundant on the coasts of both the island and the main, and possesses no mean powers of flight ; and though usually resident in localities where found, there could be no difficulty in supposing it occasionally to transport itself across the channel.

Bill and legs black. Iris rich brown. Crown, moustache, and nuchal band black. Auriculars brown, ending in a large white spot. Upper parts brownish grey, each feather being margined laterally with yellowish olive-green. Quills and tail hair-brown, margined on outer webs with greenish yellow. Throat white ; a broad pectoral band of light greyish brown. Under-parts pure white in most specimens, with only a few yellow streaks ; in others dingy yellowish white, most of the feathers margined exteriorly with sulphur-yellow. Under-wing whitish, the 4th and 5th quills equal and longest. Tail-feathers 12, somewhat graduated, with white under-shafts.

The young, before the autumnal moult, have the entire upper parts and pectoral band brownish grey, deeper and somewhat mottled on the head. The back has a tinge of yellowish green, and the quills and tail are margined with the same. The bill and legs are brown ; the iris greyish ; the throat and under-parts pure white.

These birds subsist partly on insects, and partly on berries

and small wild figs. In habits they connect the *Fringilla* and the *Muscicapæ*, assembling, like the former, in large flocks and flying from tree to tree in noisy concert in search of berries, and, like the latter, pursuing insects in the air. They have no habits in common with the skulking *Garrulax*, preferring rather to show themselves tame and conspicuous; no creeping from bush to bush, and chattering in low and coaxing whisper, in their case; but, perching on the tops or exposed parts of bushes and trees, they assemble and utter loud notes,—often, when so engaged, ruffling their crests, rounding the back and tail, and making the tips of their wings meet over their heads. Their notes are very varied, but strikingly peculiar, and I would try to syllable them if there was any chance of conveying to the reader an idea of their natural sounds. In April they commence nesting, but still keeping together in parties, which meet after the business of the day is over and amuse themselves till night-fall. They mostly build three nests in the course of the season, occasionally four, laying in the first nest usually five eggs, in the others that succeed three. In the interior the nest is large and deep for the size of the bird; it is usually made of grasses, lined with finer samples; but in the materials these birds are by no means particular, almost anything they can gather, such as scraps of paper, cotton, cloth, leaves, and feathers, being added. In the site too they are not regular; any bush or tree, of almost any height from the ground, will serve their purpose; and in the usual choice of their position they show as little discernment as the Hedge Sparrow (*Accentor modularis*) at home, frequently placing their nests in most exposed situations. They generally nestle in gardens close to the habitations of Chinese, and, being familiar birds, are protected. When their nest is approached, they make a great chattering; but they have far less to fear from man than from Magpies and *Garrulaces*.

Their eggs are of a purplish-white ground-colour, spotted closely and often confusedly with dark shades of brownish purple-grey. They measure .9 by .65 in.

✓ 48. SPIZIXOS SEMITORQUES, Swinhoe, Ibis, 1861, p. 266.

In shape of bill this singular bird a good deal resembles a

Paradoxornis, but in habits and general form it is a true *Ixos*. In China I have never found it anywhere but on the plateaux, 2000 feet high, near Foochow. They were usually to be seen perched on the tops of the twigs that were raised above the low bushy copse, and when disturbed, would drop at once under cover. Remains of *Cicadæ* and field-bugs were found in their stomachs, together with berry-seeds.

From the high ranges of Formosa my hunters brought me a solitary specimen, which appears to tally exactly in colour with the Chinese bird, but is smaller and has shorter wings and tail. I have unfortunately only this one, and that rather injured, and cannot therefore institute a satisfactory comparison between the two races.

49. *ORIOLOUS CHINENSIS*, L.

The Formosan black-naped Oriole is identical with the bird that visits China in summer, varying, like it, in size, in length, and proportions of bill, thus proving that its southerly migrations are to Cochin China rather than to the Philippines, where the larger *O. acrorhynchus*, Vigors, with no yellow wing-spot, appears to be the only species. This wing-spot is, however, scarcely a constant character; for though I have not detected the absence of it in any of my Formosan specimens, yet I have one from Canton in which it is entirely missing. This Oriole arrives in Formosa about the end of March in large numbers, and distributes itself over the flat country of the island, being rare in the hilly regions near Tamsuy, but specially abundant in the bamboo-groves of the south-west. It is by no means so common in any part of China as in Formosa. It feeds on insects, but more largely on berries and small wild figs. Its note is rather harsh; and the song of the male is short, loud, and far from melodious.

Measurements from a fresh specimen:—Length $10\frac{1}{10}$ in.; wing $5\frac{8}{10}$; tail $3\frac{8}{10}$; fourth quill rather longer than the third, and longest in the wing. Tail-feathers somewhat graduated, and angularly ended. Bill in the young bird pale dingy flesh-colour washed with brown, and blackish chiefly on the upper mandible. Inside of mouth light flesh-colour; tongue cleft at

the tip and ciliated. Eye-rim dark yellowish brown. Iris greyish brown. Legs rich leaden violet, with pale yellowish sole-pads, and light edges to scutes; claws black, with pale edges. The immature bird is strongly tinged with olive-green on the upper parts, the crown being yellower, and the quills of a lighter black. The two central tail-feathers are greenish yellow, and the dark parts of the rest more or less impregnated with that colour. The throat, breast, and belly whitish, marked with long black streaks, very faint on the first of the three. When the birds return in the spring, the plumage has undergone a decided change. The bill has become pinkish, still marked a little with brown; the black nape-band has appeared. The yellow of the upper parts and wings is still strongly tinged with olive-green; but the dark parts of the tail-feathers and the two central ones are almost entirely blackened. The under-parts have become bright yellow; but the streaks still continue, though fainter. In the next moult the streaks disappear; the black and yellow parts become brighter; but the back is still tinged with green. On the second spring-return all the light parts have become a fine golden yellow, except the tips of the primaries, which are whitish; and the black has intensified to a glossy hue. The bill has become a fine clear pink, the legs a fine dark slate-colour, and the iris a speckled purplish brown. When quite mature, the males and females are similar, but the adult plumage of the male is more quickly developed than that of the female; and hence, though you very frequently see a green and spotted female paired with a yellow male, and breeding, it is only males of late broods of the previous year that are seen breeding in immature plumage. This is consequently a much rarer sight; but it does occur. I have dissected birds in full plumage, and found them to be females. Mr. Blyth tells me that he has observed the same facts with regard to the Indian Orioles; and Prof. Schlegel has lately assured me that the same holds good with the European bird, *O. galbula*. I have known this to be the case with many birds, the *Laniidæ* for example. The male in mature and the female in immature plumage are usually found together; but later investigations have proved that in course of time the female acquires the same plumage as her lord—for some reason

or other her plumage requiring longer time to develop than that of the rougher sex. In an adult, shot Sept. 27, 1861, the iris was light brownish pink, with an outer broader brown circle; the skin round the eye was light madder-brown.

50. *PSAROPHOLUS ARDENS*, Swinhoe, *Ibis*, 1862, p. 363, pl. 13.

I must refer my readers to the above volume of 'The Ibis' for an account of the adult of this bird.

All my specimens of this species were procured near Tamsuy in March and April 1862. The most immature form I possess has the head, hind neck, axillaries, and tibiae black; throat and neck blackish brown, each feather margined with whitish brown. Upper parts dingy crimson, each feather with a brown shaft; tail washed with brown. Wing-coverts and wings deep brown. From a few feathers that still remain only partially changed, I should judge that in the plumage of the nestling the entire upper parts were dark brown, and that the transformation is effected, not by moult, but by change of colour in each feather. Under-parts brownish white, with long black streaks, the vent, sides of breast, and flanks becoming crimson.

In a more advanced specimen the colours have deepened; only a few streaks remain on the belly, and crimson underneath is fast taking the place of whitish. I have a third where the crimson on the under-parts has diffused itself, yet a few streaks remain. The upper parts are rich, but not dark, and most of the feather-shafts are whitish; many of the under-feathers are margined with whitish.

In others the plumage is quite complete and brilliant, as I have described it before. The basal part of the crimson feathers is everywhere a pure white in all the skins. Fourth quill longest in the wing. Tail-feathers 12, with white under-shafts, somewhat graduated, and angularly tipped.

The female in adult plumage does not differ from the male.

51. *HERPORNIS XANTHOCHLORA*, Hodgson.

Erpornis xanthochlora, Hodgson, P. Z. S. 1845, p. 23.

I received one specimen only of this interesting bird, from the mountainous interior near Tamsuy. It tallies almost exactly with the Nepalese species, except that the bill and tail are both

shorter, and the green of the back is darker, without so much of the yellow tinge. My single specimen I have been able to compare with one sent me by Mr. Blyth; but I dare say, if I had a series of both, the resemblance would be found to be still more complete. At present I do not feel justified in separating them. Our bird, when fresh, had the bill a light wood-brown, paler on the lower mandible, with yellow rictus. Legs light brownish-ochre flesh-colour, the claws being tipped with brown. I never saw this bird alive, and can therefore record nothing of its habits. In form it seems to connect the Willow-wrens (*Phylloscopus*) with the *Pycnonotidæ*. Length $4\frac{4}{10}$ in.; wing $2\frac{6}{10}$ in.; tail $1\frac{8}{10}$ in., of twelve equal feathers; bill $\frac{1}{2}$ in. Upper parts yellowish olive-green; crown-feathers large, with blackish shafts. Shafts of tail-feathers blackish brown. Shafts and inner webs of primary and tertiary quills deep brown, blacker on former. Cheeks and under-plumage brownish grey, more or less whitish. Axillaries, under-edges of quills, and vent greenish yellow. Bill somewhat conically shaped. Legs and feet strong, hind toe remarkably so.

This species is recorded from Nepal, Arracan, and Malacca, and is probably also found on the mountains of Southern China.

✓ 52. *ZOSTEROPS SIMPLEX*, Swinhoe, P. Z. S. 1862, p. 317.

Z. japonicus, mihi, Ibis, 1861, p. 35.

Length 4 in.; wing $2\frac{3}{10}$ in.; tail $1\frac{6}{10}$ in., of twelve nearly equal feathers. Bill and legs leaden or slate-colour. Iris blackish brown. A ring of white feathers round the eye. Upper parts yellowish green, yellower on the head. Forehead, throat, under-neck, and vent sulphur-yellow. Axillaries white. Under-parts light brownish grey, with sometimes a ruddy tinge diffused. Quills and tail dark hair-brown, margined exteriorly with yellowish green. Under-edges of quills and under-shafts of quills and rectrices white.

This species may be at once distinguished from the Northern Chinese species* by the absence of the deep rust-colour on the flanks and sides of breast, by its smaller size, and by the

* The *Zosterops* of N. China (*Z. erythropleurus*, mihi) is not identical with the Japanese species, as I have recently ascertained. See P. Z. S. 1863, May 26th.—R. S.

presence of the diminutive first primary, which in the other species is said to be entirely wanting. The Formosan bird is identical with that found throughout Southern China, from Canton to Foochow. In winter it roams about in small parties, like the Tits, from tree to tree, searching every twig for *Aphides* and other small insects. When engaged in the pursuit of its food, it hangs in all manner of attitudes, uttering the while a peculiar call-note. In spring it utters a short, sweet song. It is a bird very easily tamed in confinement, even when kept several together; and in most towns in South China it may be seen as a cage-bird. At feeding-time they are particularly lively; but when satiated, settle on their perch, sidling up to their companions, and after caressing one another for a short time, all ruffle their feathers and dip their heads under their wings. The siesta they take is not long. They all wake up suddenly and feed again, the males often putting forward the head and singing their soft melodious notes. This habit of taking mid-day siestas I have also observed in the *Parus caudatus* in confinement. The *Zosterops* is very fond of bathing; and for food, besides insects, is partial to fruit, showing an especial fondness for plantains or bananas, on which it may be almost entirely sustained. For particulars on its nesting, I must refer my readers to my Canton List (see *Ibis*, 1861, p. 35).

✓ 53. *PARUS CASTANEIVENTRIS*, Gould, P. Z. S. 1862, p. 280.

A diminutive representative of the curiously coloured *P. varius* of Japan (*Fauna Japonica*, p. 71, pl. 35), but quite distinguishable enough to be noted as a local specific form of the same type. It appears on the island of Formosa to be entirely restricted to the interior mountain-chain, where it is said to be by no means common. I have never found it on the cultivated hills, nor yet in the plantations on the plains; and, strange to say, no species of *Parus* whatever occurs to take its place there. Never having met the bird alive, I have no note of its habits.

Bill black. Legs and claws leaden grey. Length $3\frac{2}{10}$ in.; wings $2\frac{1}{3}$ in.; tail $1\frac{1}{2}$ in., of twelve feathers, slightly graduated; tarsi $\frac{5}{8}$ in.; fourth quill rather the longest in the wing. Bill and legs strong, the former resembling that of *P. ater*, L. Head and hind-neck black; a large spot of white on the latter, ex-

tending some way into the former. Throat, as far as breast, black, uniting with the black at bottom of hind-neck, and leaving the forehead, space under the eye, and cheeks white. Upper parts deep leaden grey, with a few rufous feathers adjoining the nuchal white spot. Tail the same colour as the back, washed with brown, with blackish shafts, and with narrow white tips to some of the feathers. Quills blackish brown, the primaries and secondaries margined exteriorly, and the tertiaries washed, with the colour of the back. Axillaries, carpal edge, and under-edges of quills white. Rest of the under-parts deep cinnamon-rufous.

This species may at once be distinguished from its near ally from Japan not only by its much smaller size, but also by the almost entire absence of the rufous on the upper back.

54. *ALCIPPE MORRISONIA*, n. sp.

This species, which appears to be half-brother to the Nepalese bird, *A. nipalensis*, Hodgs., is a very abundant resident in the interior of Formosa, frequenting wooded localities on the mountains, seldom under an altitude of 2000 feet. It is by no means a skulking bird, exposing itself on the large branches of trees, and frequently alighting and hopping along the ground. It feeds chiefly on insects, and, it is said, also on seeds, but this I am inclined to doubt.

Length 5 in.; wing $2\frac{6}{10}$ in.; tail $2\frac{3}{10}$ in., of twelve feathers, somewhat graduated, and angularly tipped. Fourth quill longest in the wing. Tarse .76. Bill greyish black. Legs sienna-ochre; claws the same, tipped with blackish. Irides greyish brown. A ring of white feathers girdles the eye. Head, neck, and higher back brownish ash-colour, rather whitish on the throat and between the bill and eye; a broad, somewhat obscure black line runs down on either side of the hind-neck. Rest of upper parts olive-brown, redder on the rump. Tail-feathers obscurely barred, with their shafts dark brown. Inner webs of primary and secondary quills deep hair-brown. Breast, belly, carpal edge, and axillaries ochreous white. Flanks, tibiae, and vent brownish buff-colour. Under-edge of quills and under-shafts of tail-feathers buff-white. Bristles on the loreal space black, strong, and conspicuous. Sexes similar.

In May I procured a newly-fledged young one. Its head is

brownish grey. The rest of the upper parts of a reddish sepia, instead of olive. Its belly and throat are whitish, and the remaining under-parts much browner than in the adult. In general character of colouring our bird agrees with *Liothrix* (*Alcippe*) *nipalensis*; but on comparing my large series with a specimen of that bird from Mr. Gould's collection, I note the following constant distinguishing characters. Our bird has the bill much longer and more slender; the tarse a good bit shorter, and the feet stronger; the tail less graduated. Ours wants the strong white patch in front of the eyes; the under-parts are much more brightly washed with ochreous; the axillaries are fine ochreous instead of pure white, and the upper parts are more rufescent olive. Otherwise the similarity is very great; but nevertheless, as the differences above given are constant, I have thought myself justified in separating our bird, and have named it after my friend Captain Morrison, who was for some time with me in Formosa, and assisted me in my investigations in the cause of science.

Independent of the above species, Formosa produces another of this genus,

✓ 55. *ALCIPPE BRUNNEA*, Gould, P. Z. S. 1862, p. 280.

This is a larger and browner bird than the preceding, with larger bill, but has the same black double streak on the back of the neck. The sexes appear to be similar, as in the foregoing. Bill greyish black. Legs and claws yellowish brown, with a strong tinge of yellow. This is also a mountain bird, and not observed on the plains. Its legs are much stronger, and its nails, especially the hind one, larger and more straightened. Its tail, too, is much more graduated, the outermost feather being $\frac{3}{10}$ in. shorter than the central, and all the feathers narrowing to their tips. The fifth quill is a little longer than the sixth. Length $5\frac{4}{10}$ in.; wing $2\frac{1}{2}$; tail $2\frac{2}{10}$; tarse $\frac{3}{4}$. Upper parts reddish sepia, the feathers of the head being large, rounded, and obscurely margined with black. A broad deep-black line runs from the head, above the eye, down each side of the hind-neck. Wings and tail sepia-washed, and edged with a deep-reddish tinge of same. Chin, loral space, and round the eye rufescent.

Cheeks, sides of neck, breast, and axillaries greyish brown. Flanks, tibiae, and vent of the same colour as the back. Rest of under-parts brownish white. In older birds there is less rufous on the face, and the under-parts are greyer and darker. The loral bristles are not so long and conspicuous as in the other species.

56. *PRATINCOLA INDICA*, Blyth.

Occasionally met with on the Formosan plains during winter.

57. *IANTHIA CYANURA* (Temm. & Schl.).

Lusciola cyanura, Temm. & Schl., Fauna Japonica.

Nemura rufilata, mihi, Ibis, 1860, p. 54.

Ianthia rufilata, mihi, Ibis, 1861, p. 329.

Never observed but once at Tamsuy in March, when I procured a nearly adult male.

58. *CALLIOPE KAMTSCHATKENSIS*, Gmel.

I have one of this in full plumage, shot at Tamsuy in April. It is at this season that they touch at Amoy on their northward migration; and I suspect this is merely a passing straggler.

59. *RUTICILLA FULIGINOSA* (Vigors).

Phænicura fuliginosa, Vigors, P. Z. S. 1831, p. 35.

R. plumbea, Gould, P. Z. S. 1835, p. 185.

R. lineoventris, Hodgs.

This species, originally described from the Himalayas, is found as a winter bird on the hills of Foochow, near Amoy (China). From the Tamsuy hills, Formosa, I also procured several skins, in March, identically the same. ♂ Bill black; legs brown. General plumage deep bluish grey. Wings deep hair-brown, margined with the same. Rump, vent, central portions of tibiae, and tail a fine rufous, the feathers of the latter in one specimen washed with black near their tips; in another and apparently older specimen there is no black on the tail, and the tibiae are brownish, without any rufous.

The immature plumage is of a deep olive-grey on the upper parts, the face being somewhat rufous. The wings are sepia, margined with light yellowish brown; and several of the wing-coverts carry a white spot at their tips. The rump and vent are pure white. Tail deep sepia, all the feathers at their

bases and the laterals for a great part of their length being white. Under-parts deep bluish grey, striated and mottled with white. As the bird gets older, the mottling and white wing-spots disappear and the white on the tail contracts. It is in this young plumage the *R. lineoventris*, Hodgs.

The female, I believe, always carries a partially immature plumage. She is usually of a dingy smoke-grey, rather bluer on the upper parts. Chin whitish. The under-plumage more or less obscurely mottled. Vent, basal half of lateral rectrices and a greater or less portion of all the others, and a narrow band on the upper tail-coverts white. Rest of tail sepia. Wings the same, margined paler.

✓ 60. *RUTICILLA AUROREA* (Pall.).

A few of these may be seen in the low country in winter.

✓ 61. *DRYMÆCA EXTENSICAUDA*, Swinhoe, Ibis, 1860, p. 50.

I have a series of this species both from South and North Formosa. They are undistinguishable from the South-China bird, except in being rather larger, and having usually more robust bills. The bill in this bird, which is light in winter, becomes almost entirely black in the breeding-season.

They are found throughout all the low country of Formosa, affecting places covered with coarse long grass, about the tops of which they flit and twitter, throwing their tails up and from side to side as they spring up the long grass-blade. Their song is merely a quick repetition of their usual twittering call-note. They feed on small Dipterous caterpillars and other insects. Their nests are very elegant little pieces of workmanship, consisting of a deep cup with a canopy, entirely composed of fine grass. When first made they are quite green, and elude well the eye of search as they stand sustained between the stems of long grasses. The bird lays from three to seven eggs of a light greenish blue, spotted, blotched, and waved, chiefly at the larger end, with various shades of chocolate-brown. They average .55 by .48, but vary in size and shape, and the distribution of the chocolate markings assumes all manner of fanciful forms. I have a very large series, and they are, I think, the prettiest eggs I have ever seen.

In China the species abounds in all suitable localities from Canton to Foochow. All my specimens, both from China and Formosa, have a pair of thick black bristles, curved backwards, springing from the base of the bill, on the edge of the rictus; and the tail contains only ten rectrices.

A nest, containing four young *Drymæca*, was brought to me in August. The sides of the nest were too deep for the young to void their excrement over; it is always voided in compact mass and inside the nest, and must, I think, be carried away by the parent birds. The feathers of the back and breast first opened, those of the wing next, the head-feathers somewhat later, and the rectrices last of all. The bill of the youngsters was ochreous yellow; the angle and inside of mouth light yellow, except a little blackish near the base of the tongue. Iris blackish brown; skin round the eye brownish yellow. Bare skin of the face light yellowish grey; the rest of the naked parts a raw flesh-colour. Legs and toes the same, somewhat fulvous on the claws and tibial joints.

62. *DRYMÆCA FLAVIROSTRIS*, n. sp.

In Taiwanfoo, S.W. Formosa, I procured one example of another of this genus, similar to the preceding species, but differing strikingly in its short yellow bill. It has, however, the two strong black bristles at its base. Its tarsi are much longer, with longer toes and larger and stronger hind claw. The throat, loral space, and face are also nearly white, instead of straw-colour. The upper parts are a different shade of olive-brown, tinged with rufous, and the wing-feathers are broadly edged with rufous brown. Wing $1\frac{9}{10}$ in., rather differently formed, with the fifth quill somewhat longer than the fourth and sixth. Its tail is much shorter, but I do not think this appendage is fully developed in my single specimen.

In North Formosa I did not meet this species again, and think therefore that it is restricted to the flat country of the south, where it may be abundant; but its resemblance to the foregoing, I suppose, was the reason that I did not detect it in its wild state. *Drymæca* were common enough about Taiwanfoo; but thinking them identical with the Chinese species, I did not care to procure many specimens until it was too late.

63. *SUYA STRIATA*, Swinhoe, Journal N. C. B. Asiatic Society at Shanghai, 1858.

♂, shot Dec. 24:—Length $5\frac{7}{10}$ in.; wing $1\frac{8}{10}$; tail $3\frac{1}{10}$. Upper mandible and apical half of lower dark purplish brown. Basal edge of upper and half of lower dingy flesh-colour. Tongue long, sagittate, deeply concave, and split at the end, ochreous flesh-coloured. Skin round the eye light yellowish brown; iris orange. Ear yellowish brown, oval; outer half crescent-shaped, forming an operculum. Legs orange-ochre, with flesh-coloured joints and toes; claws light yellowish brown, blackish at their tips.

This appears to be the largest known form of this Nepalese genus of Long-tailed Grass-warblers. I have not as yet noted any species of it on the hills of China. Its range in Formosa appears to be very limited, for I have only found it on the hilly country extending from the south of the Tamsuy River to the plains beyond Hongshan on the west coast (lat. $24^{\circ} 35'$), in which it generally occurs among the copse-clad ravines about 1000 feet above the sea. In these places it soon makes itself observed by its constant habit of springing up to the tops of long grasses, frisking about, and throwing up perpendicularly its long tail, uttering the while a curious jingling note very unlike that of any bird I know. It boasts of no short, pleasant song like *Prinia sonitans*; but the series of somewhat varied notes it gives forth from the eminence of a tall twig, while its tail hangs down perpendicularly and its body remains motionless, may have some claim to wild melody. I came across the species three or four times in my rambles up the hills, but its nest I was never able to find.

The sexes of this bird are similarly coloured; but they differ greatly in size, the female being every way much smaller. This is not the case with the allied *Priniæ* or *Drymæcæ*; but strikingly so in the *Megaluri*, to which our species further approximates in having a very long tail.

♀, shot in February:—Length $5\frac{4}{10}$ in.; wing 2; tail 3; tarsi .75. Bill pale yellowish, washed on culmen and apical portion of lower mandible with brown.

♂ in adult plumage, shot in March 1856:—Length 8 in.; wing $2\frac{2}{10}$; tail $4\frac{7}{10}$; tarsi .87. Bill black, with a pale tip.

Upper parts sepia-brown, the feathers being centrally darker and margined with yellowish grey. Feathers of the head large and roundish, those of the back large and oblong; all soft and lax. Wings yellowish brown, margined with light reddish brown; the fifth and sixth quills rather longer than the fourth, and longest in the wing. Tail yellowish brown, paler edged and obscurely barred, the feathers being tipped with blackish, margined with whitish, and having strong brown shafts. Rectrices ten in number, much graduated, the laterals being $3\frac{2}{10}$ in. shorter than the centrals, which exceed the two next by 1 in. Lores, space round the eye, cheeks, and under-parts with a pale dingy-ochreous tinge, with a few dark specks interspersed. Axillaries and carpal edge straw-colour; under-edge of interior quills light rust-colour. Tibiæ rufous. Two strong black bristles are given out from the base of the upper mandible on each side, and several smaller ones from the chin.

This species has its nearest ally in *Suya lepida*, Hodg., of the Himalayas, but is at once distinguishable by its very much larger size.

64. *PRINIA SONITANS*, Swinhoe, Ibis, 1860, p. 50.

This bird, found in all gardens and hedgerows throughout the plains of Formosa, is identical with that found on the Chinese main, from Canton to Foochow. It has only ten feathers in the tail, and two stiff black bristles on each side of the base of the upper mandible, together with several shorter ones under the eye and on the chin. It creeps about the bushes and long grass, making a cracking noise, I think with the tail, as it springs from stem to stem. It has a long, trilling call-note, and a short, sweet song, which the male gives forth as it stands perched on some prominent twig. It has also a curious alarm-note, resembling something the mew of a kitten. It is fond of frisking its tail about and throwing it up. It feeds on small insects, chiefly Diptera and caterpillars. It attaches its nest usually between the stalks of long grasses; at other times it places it in bushes. The nest is composed of dried grasses, fibres, and leaves, cup-shaped, covered with a broad-domed canopy, and lined with feathers and hair. It builds three nests in the course of the

season, laying in the first seven small, round, maroon-coloured eggs; in the two next, five a-piece—seldom less. The birds of the year are olive-green on the upper parts, with none of the blackish grey on the crown that adorns the adult bird. In the moult of the following spring the transformation into the adult plumage is complete.

In August 1861 I examined some young ones at Taiwanfoo. They had the bills blackish brown on the culmen; the remainder and inside of mouth, except just a little black at the base of the tongue, being bright orange-yellow. Over and under the eye, to base of bill, bright sulphur-yellow. Legs and claws light orange-ochre.

I have a very large series of the eggs of this bird. They average $\cdot 58$ by $\cdot 46$, and are usually maroon-colour, obscurely blotched and spotted with a deeper shade of the same; but some have the ground-colour white, or nearly white, spotted chiefly at the larger end with maroon-red; others have a deep brownish-maroon ring round the apex, others the same round the middle. The spots and shades are varied in every conceivable way, and, in looking through the series, the size and even the shape are found to be by no means uniform.

✓ 65. *CISTICOLA SCHÆNICOLA*, Bp.

C. cursitans, Franklin.

C. brunneiceps, Temm. et Schl., Faun. Japon.

C. tintinnabulans, Swinhoe, Ibis, 1860, p. 51.

“Length $4\frac{1}{2}$ in.; wing $2\frac{2}{10}$; tail $1\frac{8}{10}$. Bill brownish flesh-grey, much darker on culmen. Iris light yellowish brown; skin round the eye blackish brown. Inside of mouth black. Ear-covert oval, nearly as large as the eye; operculum large and exposed. Legs and toes ochreous flesh-colour, somewhat browner on claws.” The above refers to a fresh specimen killed at Tamsuy in April. I have six specimens from Formosa, three from India, and several from China. The Indian birds are smaller and more rufescent, but they present entirely the same style of colouring as the rest of mine, the oldest bird having a uniform brown crown, as in the single individual from Japan, from which the description in the ‘Fauna Japonica’ is taken. My Formosan

specimens differ a good deal in size and markings, in length of wings, in length and bulk of bill, and in height of tarse. One of them also has the crown a uniform deep brown. I therefore cannot help agreeing with Mr. Blyth in considering all the allied forms of Eastern Asia simply as local varieties of *C. schænicola* of Southern Europe.

This is the prevailing species on all the lower grassy hills, from the banks of the Tamsuy River right to the south. At Tamsuy it disputes the ground with the species that follows, and I do not think it is found much further north or on the east side. In China it is abundant in all suitable localities, from Canton to Peking; and it also occurs in Japan.

The eggs of our bird vary from three to five, are thin and fragile, and of a pale clear greenish blue.

66. *CISTICOLA VOLITANS*, Swinhoe, Journal of N. C. B. of Asiatic Society at Shanghai, 1858.

Crown and under-parts pale straw-colour, rufescent on the axillaries and tibiæ. Back and wing-coverts deep brown, margined with brownish grey. Wings hair-brown, margined deeply with yellowish brown. Rump yellowish brown. Tail blackish brown, margined and broadly tipped with pale yellowish brown. Under side of inner quills pale rust-colour.

Length $3\frac{7}{10}$ in.; wing $1\frac{8}{10}$; tail $1\frac{2}{10}$. Bill ochreous brown, darker on gonyes than above. Iris ochreous straw-colour. Skin round eye yellowish brown. Inside of mouth black, marked with ochre-yellow. Rictus light greenish ochre; ear the same. Legs dark ochre, with light claws. This diminutive species with whitish head and short tail, apparently peculiar to Formosa, abounds on all the grassy hills in the north-west about Tamsuy, in the north about Kelung, and in the north-east about Sawo. It seems to replace on the mountains the common species, *C. cursitans*, of the lower hills; and in the country about Tamsuy (the northernmost range of the latter), it is found frequently in company with it. In habits it much resembles the common species, dropping, when pursued, into the thickest grass, about the roots of which it creeps, and whence it is hard to flush it. It frequently perches on the summit of grass-stalks, and is then at once

recognizable by its white head. It has a short flitting flight, and frequently springs into the air some twenty or thirty feet, uttering its well-marked notes, *tee-tee-teup-teup*. In June 1857, when circumnavigating Formosa in H.M.S. 'Inflexible,' I first made the acquaintance of this species at Sawo, and afterwards at Kelung. It was then its breeding-season, and the numbers that abounded about the long grass were uncommonly lively; but its very diminutive size and activity precluded my obtaining more than one specimen of it. This I described the same year, at a meeting of the North China Branch of the Asiatic Society, under the above name. In Tamsuy I found it very locally distributed, and much rarer than *C. cursitans*. It was only after great difficulty that, through the aid of my constable, I was enabled to add another example to my collection, and the high and remote localities it inhabited prevented my obtaining any facts as to its nesting or other habits. I think I am right in laying down its habitat in Formosa as restricted to the hills on the eastern and northern portion of the island, Tamsuy being probably its most southerly range on the western side.

The feathers of the tail of this species broaden to their ends, and are graduated, the external one being .46 in. shorter than the central. The first quill of the wing is very short, the third and fourth being nearly equal and longest. Both our species of this genus have twelve feathers in the tail, and so approximate to the *Salicariæ* rather than to the *Drymæcæ* and *Priniæ*, which they resemble in many respects.

✓ 67. CALAMOHERPE ORIENTALIS, Bp. Consp. p. 285.

Salicaria turdina orientalis, Schleg. Faun. Japon. p. 50.

Acrocephalus magnirostris, Swinhoe, Ibis, 1860, p. 51.

This Eastern form of Reed-Thrush visits Formosa in summer, and may then be found in all wet localities abounding in tall reeds. It has a most powerful and polyglot voice, and delights all day, and often greater part of the night, in making itself heard. I have traced it in China as far north as Shanghai; and it also occurs in Japan. In summer it seeks more southerly latitudes.

68. CALAMOHERPE CANTURIANS.

Arundinax canturians, Swinhoe, Ibis, 1860, p. 52.

This bush-loving species, common in China (from Canton to Shanghai), is also found in Formosa. Indeed, it was in Formosa that I first discovered the species in 1856. I for a long time thought that this was merely the *S. cantans* of the 'Fauna Japonica,' but my late visit to the Leyden Museum has decided this question in the negative.

♂, shot at Tamsuy, 6th March, 1862. Length 6.6 in.; wing 3; tail 3. Its gizzard contained Diptera and larvæ.

It appears to be with us a resident species, as I have procured specimens in winter as well as in summer. It creeps about the hedges much in the manner of *Sylvia cinerea* of Europe, and utters a warning note, when approached, a good deal resembling that of that bird. Its song is a short trilling note, sweet, but never varied.

69. CALAMOHERPE MINUTA.

Arundinax minutus, Swinhoe, Ibis, 1860, p. 52.

This miniature of the above is also a bush-frequenting bird, but of livelier habits. It is quite distinct from *Salicaria cantillans* of the 'Fauna Japonica.' I have repeatedly procured it at Amoy in spring; but I have reason to think that in South China, as in Formosa, some stay all the year through. It suspends its pretty nest between the stalks of grasses and reeds. It is formed of grasses and fibres, lined with finer materials and catkins. The inside cup is very deep, and usually contains five clear greenish-blue eggs, averaging .64 by .5 in. When disturbed on its nest, the bird flies to an adjoining tree, hiding itself among the foliage, but continuing to repeat an impatient "churr" note until the intruder moves away.

70. PHYLLOPNEUSTE FUSCATA.

Phylloscopus fuscatus, Blyth.

Sylvia (Phyllopneuste) sibirica, Middendorff, Sibirische Reise, p. 180.

This brown Siberian species of the Willow-Wren group appears in winter to spread itself all throughout India and China, and a few find their way during that season even to Formosa.

✓ 71. PHYLLOPNEUSTE CORONATA.

Ficedula coronata, 'Fauna Japonica,' t. 18.

Summers in North China, the Amoor, and Japan; and winters in South China, at which season a few visit Formosa.

✓ 72. PHYLLOPNEUSTE SYLVICULTRIX.

Phylloscopus sylvicultrix, Swinhoe, Ibis, 1860, p. 53.

A summer visitant to South China, passing in large numbers through Amoy in its autumnal migrations south-eastwards, probably to the Philippines. In these passages it touches at South-west Formosa; and at Taiwanfoo, for a few days in October, I found them abundant. I neither saw them before nor afterwards; nor did I meet with them at Tamsuy. I have the following note on a specimen shot at Taiwanfoo, 10th October, 1862:—"Length $4\frac{4}{10}$ in.; wing $2\frac{2}{10}$; tail $1\frac{3}{10}$. Bill light olive-black, with edges and basal half of lower mandible yellowish. Inside of mouth and rictus bright yellow. Eyelid black; iris dark brown. Legs and claws olive-brown, somewhat washed with olive-yellow, especially on joints."

✓ 73. REGULOIDES SUPERCILIOSUS (Gmel.).

Regulus modestus, Gould.

Reguloides proregulus of Blyth, and of my former lists.

I always understood this species, which is identical with Mr. Gould's Dalmatian Gold-crest, to be the *Motacilla proregulus* of Pallas, until the other day, at Leyden, Prof. Schlegel told me that he thought Pallas's description applied rather to the *R. chloronotus*, Hodgs.; and on carefully perusing the 'Zoograph. Rosso-Asiat.' (p. 499) I certainly find this to be the case. Pallas there tells you that he observed his bird in the beginning of May, in Daüria; and in the description that follows distinctly says, "Dorsum cinereo-flavum vel virescens, ut et tectrices caudæ; *sed zona lata uropygii albido-flava.*" (Mark the words in italics.) This whitish-yellow rump-band never occurs in the *R. modestus*, but always in the *R. chloronotus*, Hodgs. I found both species common at Peking in summer, and they doubtless also pass that season in Siberia. In winter both species spread down the coast of China, and away even to the plains of India. The *R. modestus* is generally met with singly; the *R. chloronotus*

in pairs. In the note to his article on *Motacilla proregulus*, Pallas also alludes to the *R. modestus*, doubting whether a bird of this last species received from the banks of the Lena, and which he had referred to *Motacilla acredula*, L., might not be the female of his *M. proregulus*. Such a doubt has probably entered the head of every field-naturalist on first encountering the two species, but a careful study of the two birds soon dispels it. Let us turn to page 497, under the head "*Motacilla acredula*" (*i. e.* probably the Chiff-chaff, *Sylvia rufa*, Lath.). We find, in a note, mention made of the birds observed by M. Schmid on the Lena, which he had briefly described in a MS. as "*Reguli non cristati, omnium forte minimi.*" These were doubtless the *R. modestus*; but as no name was there suggested for them, we must look elsewhere for a title for our interesting little friend.

In winter it is not uncommon about woods and groves in Formosa, its loud single call-note, "*sweet,*" always attracting attention to its presence. It is very rarely in company with others, is lively and constantly in motion in pursuit of its insect-food, and seems to be entirely happy in its own resources.

A comparison of skins has amply proved that the birds from China, Formosa, and India are one and the same, and identical with the little Dalmatian (so-called) stranger procured on the coast of Yorkshire.

✓ 74. *MOTACILLA LUZONIENSIS*, Scop.

M. leucopsis, Gould.

This species, which can at once be distinguished from the two other Pied Wagtails of Southern China by its white face and want of black line through the eye, is a resident bird in Formosa. It is also smaller, and has a longer bill. There is much white on the wings. In summer the back becomes entirely black, and the black on the breast extends close up to the chin, within half an inch of the bill. Its eggs are very similar to those of the Pied Wagtail of England.

✓ 75. *MOTACILLA LUGUBRIS*, Pall.

M. lugens, 'Fauna Japonica,' pl. 25.

I procured one specimen of this in March, after a heavy gale.

✓ 76. *MOTACILLA OCULARIS*, Swinhoe, Ibis, 1860, p. 55.

This species is not so common as *M. luzoniensis*, but I also detected it breeding on our island. It has less white on the wings than *M. lugubris*, and a perennially grey back. In summer the whole of its breast and under-neck, from the bill downwards, becomes black. In the young plumage, *M. lugubris* can be always distinguished by its much whiter wings; and in the adult winter plumage, by its black carpal region and its black-spotted back. In summer the difference is far more apparent. Both species have black streaks through the eye, which distinguish them to the most casual observer from the white-faced *M. luzoniensis*.

M. ocularis appears to range from Canton to Peking*.

✓ 77. *MOTACILLA BOARULA*, L.

Motacilla sulphurea, Bechst.

A common resident. A male, with the black on the throat just showing itself, used to visit every morning, in January 1862, a drain under my window. The wagging up and down of his hind quarters seemed incessant, even while the bird itself was standing still. While preening its feathers, still the tail wagged, not stopping even while the little fellow drew between his mandibles the feathers that form its coverts. The only moment of cessation I observed was when the bird stretched its wing and leg. It used to engage itself in catching the flies among a pile of stones, perching on the top, stamping its little feet, shaking its tail, and constantly turning round and round in the same place.

✓ 78. *BUDYTES FLAVA* (L.), var. *RAYI*.

Our South China form of Yellow Wagtail is the true *Motacilla flava*, L., having in full dress a grey head, and white chin and eye-brow. From North China (Tientsin) I have seen specimens not to be distinguished from the European *B. cinereocapilla*, with the entire

* I find, as I had suspected, that the Wagtail of this form from the interior of China, Siberia, and the Amoor, is always grey-backed in summer. In such case the black-backed race will be peculiar to the Japanese islands, and my *M. ocularis* will merely be a synonym of the true *M. lugubris* of Pallas. For the Japanese race I would propose the specific name *japonica*.
—R. S.

head dark grey. In the island of Formosa the *Budytes* has the head uniform in colour with the back, and a yellow eyestreak in the adult plumage, being (except perhaps in the rather darker ear-coverts) barely distinguishable from the form peculiar to the British Islands. Indeed, so similar are the birds from these two widely separated localities, that I can scarcely do otherwise than regard them merely as varieties of the *B. flava*, their aberrancy from the typical colour and their cosimilarity being due to some insular and climatal causes which we cannot just now, with any certainty, fathom. The peculiar greenness of the head is constant in all my adult specimens, with one or two exceptions, which have more or less grey on the forehead, and an inclination of the eyebrow and chin to be white instead of yellow. This would doubtless likewise be found if a large series of British skins were examined. This apparent desire of nature to revert to the typical colour, and the absolute identity of the two forms in immature and undress plumage, resolve me in setting down the Formosan as a variety; for if we are to regard species as special creations, how can we reconcile the fact of two islands, separated by an entire hemisphere, producing the same form almost entirely restricted to themselves, and represented on their opposite mains and throughout the intervening vast tract of land by a single species, of which specimens procured from the extreme east and extreme west are positively identical?

The Yellow Wagtail is with us, in Formosa, a constant resident, assembling in winter in large parties and remaining about the fields. In spring it pairs, and scatters itself about the country, resorting chiefly to the hill-side streams for the purposes of nidification. I suspect also that a good many repair to Japan for the summer.

79. *ANTHUS AGILIS*, Sykes.

A. arboreus (var.), 'Fauna Japonica,' tab. 23.

This Pipit is abundant in winter in all groves and copses, feeding about under the shadow of the trees. The younger birds are greener on the back and distinctly spotted: in this plumage they might almost be mistaken for the European *A. arboreus*. In the adult the upper parts become more sombre and the spots

obscured. In summer a rufous tinge diffuses itself over the entire bird, especially on the lores, eyebrows, and under parts, leaving, however, the centre of the belly nearly white.

They leave us for the north in spring, few, if any, remaining to breed.

✓ 80. *ANTHUS CERVINUS*, Pall.

A. pratensis japonicus, 'Fauna Japonica'?

Visits Formosa in large numbers during winter, accomplishes its vernal moult, and leaves us in April and beginning of May. This transformation of the winter into the summer plumage is not made by a changing of colour in the feathers, but by an entire moult even to the quills of the wings and tail. When the summer plumage is completed, no traces are left of the black spots and streaks on the throat and breast, which become a deep clear vinaceous. A few streaks, however, usually remain on the flanks.

✓ 81. *ANTHUS RICHARDI*, Vieill.

A very rare straggler to Formosa, though a common winter bird in South China.

[To be continued.]

XXVI.—*Synopsis of the known Species of Dacnis.*

By P. L. SCLATER.

(Plate VII.)

MR. LAWRENCE having kindly forwarded to me for inspection specimens of both sexes of a new *Dacnis*, which he has lately described in the 'Annals of the Lyceum of Natural History of New York,' as mentioned *anteà* (p. 110), I take the opportunity of giving a figure of this beautiful bird, and a short synopsis of the species of the genus, so far as I have any knowledge of them. My former papers relating to the same subject will be found in 'Contributions to Ornithology,' 1851, p. 106, and in the 'Proceedings of the Zoological Society' for 1854 (p. 253).